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Students' Perception on the Application of Blended Learning within Clinical Rotation during the Covid-19 Pandemic at the Faculty of Medicine, Universitas Padjadjaran in 2021

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Abstract
The government of Indonesia has shifted face-to-face teaching and learning activities to online learning to prevent COVID-19 transmission. Still, clinical rotation and skills practice in hospitals are compulsory for medical students. Therefore, blended learning is applied. This new system is applied in the Medical Profession Study Program, Faculty of Medicine, Universitas Padjadjaran, and limited studies describe this learning within clinical rotation. The purpose of this study was to describe the implementation of blended learning during the COVID-19 pandemic based on students' perceptions. Active students of Medical Profession Study Program from class of 2020-2021 (n=261) were invited to participate in this study. Participants were requested to respond to 21 "yes/no" questionnaire. This study was conducted from December 2021 to January 2022. Students who did not take part in the blended learning system were excluded from the study. The findings showed that most students were aware of the adoption of blended learning (yes > 50%). The highest percentage of "yes" answers was the question about students' awareness of virtual face-to-face learning activities (Virtual Synchronous) (98.95%). Meanwhile, the lowest percentage of "yes" answers was the question about the student's perceptions regarding the application of a structured schedule (during working hours) (38.31%). Blended learning during the COVID-19 pandemic from the student's point of view is already per the decree and guidebooks. The structured schedule experienced by the students was not fully implemented during working hours.

Keywords: Adaption, Learning, COVID-19, Student

1. Introduction

Coronavirus disease-2019 (COVID -19) by SARS-Corona Virus 2 (SARS-CoV2) emerged in China at the end of 2019. In Indonesia, the number of COVID-19 cases reached 4,343,185 as of January 30, 2022, with a death toll of

144,303 people (Reid et al., 2022; WHO, 2022), and becomes one of the highest numbers of COVID-19 cases in Southeast Asia. Based on the Circular from the Minister of Education and Culture Number: 36962/MPK.A/HK/2020 dated March 17, 2020, regarding Online Learning from The Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia has shifted teaching and learning activities to online to prevent COVID-19 transmission (The Minister of Educational and Culture, 2020). However, other studies state that online teaching and learning systems also have negative impacts by causing confusion and dissatisfaction for students, which leads students to experience stress and lack of motivation in learning (Aji, 2020; Argaheni, 2020, Dowd et al., 2021).

The Rector of Universitas Padjadjaran, similar to other universities (Dowd et al., 2021; Haris et al., 2021; Unpad, 2020) issued a recommendation through the Decree of the Rector of the Universitas Padjadjaran No.1990/UN6.RKT/Kep/HK/2020 concerning the guidelines for organizing educational, research, and student activities during the COVID-19 pandemic (Haris et al., 2021). Based on this decree, clinical skills practice in hospitals was compulsory. Therefore, medical, health professionals, specialists, and sub-specialist education activities did not apply the online teaching and learning system 100% and blended learning was applied.

Study reports that students have higher levels of interest and motivation when participating in blended learning classes (reference). Hence, the implementation of blended learning has its advantages and ought to be further enhanced for its ability to draw students' interest and motivation in their learning (Osman and Mohd, 2020). Somehow, blended learning faced obstacles, so good collaboration between teachers, students, and parents is needed. Teachers are required to be creative in providing a learning platform, students are required to be active, and parents are required to accompany students during learning (Noervadila et al., 2021). In Medical Profession Study Program, Faculty of Medicine, Universitas Padjadjaran (Program Studi Profesi Dokter Fakultas Kedokteran Universitas Padjadjaran, PSPD FKUP), blended learning system is a new thing and there is no research that describes it. Therefore, this study aimed to describe the adaptation of blended learning during the COVID-19 pandemic from the perspective of PSPD FKUP students.

2. Method

The prepared questionnaire aims to see the adaptation of blended learning based on the student's perspective. This study used a closed questionnaire with a choice of answers "yes/no" or verification questions. This questionnaire question is pragmatically valid to seek confirmation without bias in the expectations of positive or negative responses (Latifah et al., 2022). The study was conducted at PSPD FKUP from December 2021 to January 2022. The research population was ±500 students of PSPD FKUP for the period 2020 and 2021 who were the object of the application of blended learning. The sample size was estimated using the Slovin formula, with a minimum of 223 students (Magmood, 2014). The questionnaire was distributed to the samples randomly (simple random sampling).

This study received approval from The Unpad Research Ethics Commission (Number 112/UN6.KEP/EC/2021 ethics. The questionnaire was prepared based on the Decree of the Chancellor of the University of Padjadjaran No.1990/UN6.RKT/Kep/HK/2020, the Guidebook for Implementing Blended Learning at the Universitas Padjadjaran, and the Guidebook for Adaptation of Medical and Health Profession Education in the Era of the COVID-19 Pandemic (Haris et al., 2021; Unpad, 2020; Findyarrtini et al., 2020).

Twenty-one question items were distributed to respondents online through free survey administration software from Google Docs based on a web application, namely Google Forms. The collected questionnaire data was then processed quantitatively using percentages (Adelia et al., 2021).

"Yes/no" questions are unbiased and clearly describe positive or negative answers (Magmood, 2014). So, there is no further analysis that follows the percentage analyses. The result is determined based on the Majority Rule where the answer (choice) receiving more than 50% of the votes is the winner (Burgman et al., 2013). The majority (>50%) of the "yes" answers from the respondents described that PSPD FKUP was adapting the question items.

On the other hand, the majority (>50%) of the "no" answers from respondents describe that PSPD FKUP did not adapt the question items since the respondents did not feel it directly (student of PSPD FKUP).

3. Results

Data of the 261 respondents to the questionnaire are shown in the following table. The majority of respondents answered yes (> 50%) to the questionnaire, except for question item number 18 (eighteen) about the structured schedule of blended learning.

Table 1: The number of responses and percentage of answers to the questionnaire

Question	Yes		No	
	Total (n)	**Percentage (%)**	**Total (n)**	**Percentage (%)**
1. Are you currently undergoing a blended learning system? Blended learning is a combination of face-to-face meetings in traditional classrooms (traditional learning) and digital classrooms (e-learning) online (in a network).	191	**73.18**	70	26.82
2. Do you experience Direct Synchronous (face-to-face) learning?	177	**67.82**	84	32.18
3. Do you experience Virtual Synchronous learning (online)?	258	**98.85**	3	1.51
4. Do you experience Individual Asynchronous learning? (Learning is done individually and carried out wherever and whenever according to the conditions, speed, and interest of each student in learning).	225	**86.21**	36	13.79
5. Do you experience Asynchronous Collaborative learning? (Learning activities are carried out in groups and collaboratively using appropriate learning technology. For example, writing essays in Google docs).	244	**93.49**	17	6.51
6. Do lecturers provide online course learning materials that are in line with the learning outcomes of graduates and study programs?	251	**96.17**	10	3.83
7. Do the teaching materials vary in one Online Course? Consists of at least three forms (textual, image, audio, simulation, animation, multimedia, and others).	212	**81.23**	49	18.77
8. Do Online Course teaching materials integrate the results of research and/or community service that are used as illustrations or examples of course materials?	198	**75.86**	63	24.14
9. Are Online Course teaching materials contextual and up-to-date (following the development of science)?	252	**96.55**	9	3.45
10. Are the online course teaching materials mostly the original work of the course teaching team, or are they using other people's work with copyright?	243	**93.10**	18	6.90
11. Do courses that use blended learning have the characteristics of interactive, holistic, integrative, scientific, contextual, thematic, effective, and student-centered?	219	**83.91**	42	16.09
12. Do courses that use blended learning have a map of learning stages, semester lesson plans, a list of	221	**84.67**	40	15.33

Question	Yes		No	
	Total (n)	Percentage (%)	Total (n)	Percentage (%)
teaching materials, study activity plans, lecture implementation rules, assessments, and assessment criteria?				
13. Do courses that use blended learning combine synchronous learning (at the same time) and asynchronous learning (at different times)?	221	**84.67**	40	15.33
14. Do courses that use blended learning use a variety of media and learning technologies?	222	**85.06**	39	14.94
15. Do courses that use blended learning provide opportunities for interaction between students?	248	**95.02**	13	4.98
16. Do courses that use blended learning provide opportunities for interaction between students and lecturers?	251	**96.17**	10	3.83
17. Do courses that use blended learning provide you with information, assignments, and work time that you can follow?	244	**93.49**	17	6.51
18. Do courses that use blended learning have a structured schedule during working hours?	100	38.31	**161**	**61.69**
19. Are the competencies or learning outcomes written at the beginning of each learning activity?	172	**65.90**	89	34.10
20. Is the grading system delivered in the learning contract at the beginning of the semester? (Regulations for Evaluation of Learning Outcomes, assessment, and weighting)	188	**72.03**	73	27.97
21. Is current learning able to provide opportunities for students to improve learning outcomes?	218	**83.52**	43	16.48

4. Discussion

In this study, the results of question number 1 showed that majority of the students are aware that the blended learning system has been implemented in PSPD FKUP. Therefore, PSPD FKUP students have self-awareness of this blended learning system. Several studies have stated that self-awareness in students has a positive impact and can significantly increase reading interest and discipline (Maharani and Mustika, 2016; Fransisca, 2022). These results can certainly improve learning outcomes which supports the results of questionnaire number 21 (Is current learning able to provide opportunities for students to improve learning outcomes? Yes 83.52%).

The questions number 2 to 5 show that students feel that there is Direct Synchronous, Virtual Synchronous, Individual Asynchronous, and Collaborative Asynchronous learning in this adaptation. Based on the results of the adaptation analysis of learning activities, it can be described that from the point of view of PSPD FKUP students, blended learning adaptation during the COVID-19 pandemic at PSPD FKUP has followed the guide book "Adaptation of Medical Education and Health Professions in the Era of the COVID-19 Pandemic", in where blended learning is expected to emphasize flexibility, engagement, student-centered, high interaction (between teaching staff, teaching staff-students, between students), collaboration, and communication; both synchronously (directly at the same time) or asynchronously (Findyartini, 2020).

In the blended learning system, teachers are expected to be creative to achieve successful and effective learning even though learning is carried out remotely (Pratama and Mulyati, 2020; Diva et al., 2021). The creativity of teachers can be seen through the variations in teaching materials, teaching styles, media used, and patterns of interaction during learning (Le et al., 2022). Based on questions number 6 to 10, lecturers at PSPD FKUP provide online course learning materials that line with the learning outcomes of the graduates and study programs. They

provide variety to the teaching materials and integrate the illustrations or examples of research and community services in online course teaching materials. The materials are contextual and up-to-date, and are the original work of the course teaching team, or are using other people's work with copyright. In this case, PSPD FKUP students have felt the lecturers' creativity in providing a learning platform. Research results by Zurida et al. stated that teaching variation significantly affects students' motivation in learning (Zurida et al., 2023). This variety of teaching materials will make it easier for students and teachers in the learning process, both face-to-face and virtual (Costado et al., 2021). This adaptation helps overcome obstacles in implementing blended learning which requires good collaboration between teachers, students, and parents (Magmood, 2014).

Based on the results of questions number 11 to 17, the blended learning adaptation at PSPD FKUP is running according to the standard decrees and guidebooks (Unpad, 2020; Haris et al., 2021; Findyartini et al., 2020). It is because students felt the courses that adapt the blended learning process at PSPD FKUP are: (1) have the characteristics of interactive, holistic, integrative, scientific, contextual, thematic, effective, and student-centered; (2) have a map of learning stages, semester lesson plans, a list of teaching materials, study activity plans, lecture implementation rules, assessments, and assessment criteria; (3) combine synchronous learning (at the same time) and asynchronous learning (at different times); (4) use a variety of media and learning technologies; (5) provide opportunities for interaction between students; (6) provide opportunities for interaction between students and lecturers; and (7) provide information, assignments, and work time that students can follow.

However, in terms of a structured schedule, students felt that this blended learning system is not only done during working hours. The result of (question number 18 is the question with the smallest "yes" answer percentage of the entire questionnaire (21 questions) and is the only item with the majority answer being "no" (161 out of 261, 61.69%).

The good students submit exercises during the daytime while students who fail the final examination learn very early in the morning or very late in the evening. However, learning time is not the main determinant. It is the total amount of learning that has a high impact on students' success (Mulenga et al., 2016). The absence of learning restrictions in working hours creates flexibility in time management or management, both for teachers and students. Flexibility is needed in learning, especially asynchronous learning, to encourage the emergence of independent learning and student motivation to be more active (Firman and Rahman, 2020). This flexibility allows students to access the learning environment when they are ready and mentally present, thus growing a learning culture that is innovative, unfettered, and tailored to student needs (Candra et al., 2022). Daroedono et al. (2020) found that time flexibility could support distance learning as in blended learning (Daroedono et al., 2020). Therefore, learning outside of working hours supports distance learning by providing flexibility in learning.

On questions about learning assessment, questions number 19-21, PSPD FKUP students feel that the current learning has written down the competencies or learning outcomes that are intended, has explained the assessment system, has explained the grading system, and they have felt that blended learning provide opportunities for students to improve learning achievement. These results are consistent with other studies which state that the use of blended learning methods can significantly improve learning outcomes (Sewang and Aswad, 2021; Rachman et al., 2019).

The definite answer to the “yes/no” question provides a picture of the perceived adaptation of blended learning at PSPD FKUP. This study is inseparable from limitations. Since this study uses a closed questionnaire, the limitations of respondents in providing detailed answers that could reflect the true feelings that they felt regarding the topics asked in the question items. We did not compare the length of time students experienced the blended learning system with their answers. We have also not been able to conduct further research on the effectiveness of blended learning on their learning outcomes. Therefore, we strongly support further research to describe the blended learning adaptation based on respondent's characteristics and its effectiveness.

In conclusion, blended learning during the COVID-19 pandemic from the student’s point of view is already per the decree and guidebooks. Most students take part in blended learning adaptations and there is high awareness of

students about face-to-face virtual (Virtual Synchronous) learning activities. The structured schedule experienced by the students was not fully implemented during working hours.

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Using of Technology Digital for Learning Management of Teacher at School under the 30th Network School Group, Prawet District Office Bangkok

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Abstract
This research on the use of digital technology for instructional management by teachers in Network Schools Group 30, Prawet District Office, Bangkok, aims to: 1) study the use of digital technology in instructional management, 2) compare the use of digital technology based on educational qualifications, teaching experience, and school size, and 3) explore guidelines for the effective use of digital technology. The research was conducted in two phases. In the first phase, data were collected from 125 teachers, selected through stratified sampling. A questionnaire using a 5-point Likert scale was employed, and data were analyzed using means and standard deviations. In the second phase, interviews were conducted with three experts, selected through purposive sampling, using a structured interview format. Data were analyzed using content analysis. The findings revealed that: Overall, the use of digital technology for instructional management was at a high level, with the highest mean score in the aspect of using digital tools. There were no significant differences in the use of digital technology based on educational qualifications, teaching experience, or school size. The proposed guidelines suggest teachers use online platforms (e.g., Google Classroom, Zoom) and applications (e.g., Kahoot, Quizizz) to enhance student engagement and enable real-time assessment. Teachers should also develop skills in programming, creating digital learning materials, and utilizing basic digital tools, with an emphasis on digital safety.

Keywords: Digital Technology Use, Instructional Management, 30th Network School Group

1. Introduction

The Ministry of Education, under the 20-Year National Strategy Master Plan (2018-2037), emphasizes lifelong learning and the development of Thai people's potential at all life stages. This reform aims to prepare learners for the 21st century by fostering well-rounded individuals who are morally sound, skilled, and capable of driving the country toward long-term stability, prosperity, and sustainability. The policy for the fiscal year 2021 focuses on building trust in society and improving educational quality through digital government transformation and education system reform, aligning with lifelong learning needs in the 21st century. The objective is to establish an efficient and inclusive education system that empowers all Thais to contribute effectively to national development (Ministry of Education, 2021: 1-2). Thailand places significant importance on educational technology as outlined in Section 9 of the National Education Act of 1999 (amended in 2002). This section highlights the need to develop

personnel who can produce and utilize digital technology for education, enhancing knowledge, skills, and the efficient use of appropriate tools. Learners have the right to develop digital literacy and technological skills, enabling lifelong self-directed learning (Office of the Education Council, 2019: 15-16). To maximize educational benefits, the government promotes research, monitors digital technology usage, and evaluates its efficiency in enhancing learning processes. Thailand's drive toward "Thailand 4.0" highlights the role of digital innovation and creativity in education. The adoption of digital technology in school management, classrooms, and teaching enhances efficiency and flexibility. School administrators must integrate digital tools across academic, budget, personnel, and general management domains to foster effective educational administration. Teachers can innovate teaching practices using computers, digital learning platforms, and management tools to optimize learning outcomes (Jeeranan Moolmatra, 2021: 24-25). Given the significance of integrating digital technology into education, this study explores the use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok. The study aims to assess the current level of digital technology utilization and propose guidelines for its effective integration into instructional practices.

2. Research Objectives

1. To study the use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok.
2. To compare the use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok, categorized by educational qualifications, work experience, and school size.
3. To identify guidelines for the use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok.

3. Research Hypotheses

1. The use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok, is at a moderate level or higher.
2. The use of digital technology for instructional management among teachers in Network Schools Group 30, Prawet District Office, Bangkok, differs significantly based on teachers' educational qualifications, work experience, and school size.

4. Literature Review

The research on "The Use of Digital Technology for Instructional Management of Teachers in Network Schools Group 30, Prawet District Office, Bangkok" involved studying related documents, theories, and research findings as follows: 1. Definitions and Concepts of Digital Technology Use.

Boonchu Jaisai (2021: 51) stated that the use of digital technology involves processing information to support work activities, including data input, storage, management, protection, communication, and retrieval. It requires integrating various technologies seamlessly. Digital skills are essential for achieving work efficiency.

Waritsorn Phaowanich (2021) described digital technology use as encompassing basic to advanced competencies in using digital devices and software. This includes knowledge and the ability to effectively utilize digital tools, develop software, and apply applications to enhance performance.

Anthika Prinnyanilkul et al. (2020: 8) highlighted that digital technology use involves effectively operating computers, mobile devices, and digital tools for searching, collecting, processing, using, and systematically storing data. It also includes the ability to present work skillfully, understand complex information, and utilize the internet for critical thinking, creativity, and collaboration.

Sopita Sawangleartkul (2017) emphasized that digital technology use refers to expertise in using computers, digital devices, and internet connectivity. It also involves software creation, making informed decisions in online activities, ensuring safety, and avoiding negative impacts.

Salesforce (2021) stated that digital technology includes communication applications and devices, such as networks, for efficiently managing data. It involves online searches, email, programming, and specialized development, which are essential for effective communication and collaboration.

University of Nevada, Las Vegas (UNLV) (2021) described digital technology use as utilizing the internet, computers, and mobile devices to perform tasks like searching, processing, creating content, sharing work, and using digital media.

The use of digital technology for instructional management by teachers can be summarized as the ability to utilize relevant digital tools for searching, collecting, processing, and accessing data networks. It also includes systematically managing and storing data, promoting critical thinking and creativity, and developing advanced skills for creating media or software. Moreover, it involves impressive presentation skills, understanding complex information, distinguishing real from virtual environments, and collaborating effectively.

These digital skills support teachers in enhancing instructional management efficiency, enabling them to utilize technology to optimize classroom learning, data management, and collaboration.

5. Research Methodology

Step 1: Study and Comparison of Teachers' Use of Digital Technology for Teaching Management Based on Educational Background, Work Experience, and School Size

1. Population and Sample
    - Population: 185 teachers from Network Schools Group 30, Prawet District, Bangkok.
    - Sample: 125 teachers, selected using G*Power software for sample size calculation with a power of 0.99, significance level of 0.01, and an effect size of 0.3. The sampling was done using Stratified Random Sampling and further refined by Simple Random Sampling based on school size.
2. Research Instruments
    - A questionnaire consisting of:
        - Part 1: Demographic data (Check-list format).
        - Part 2: Teachers' use of digital technology (5-point Likert scale):
          1 = Very Low, 2 = Low, 3 = Moderate, 4 = High, 5 = Very High.
3. Development of Research Instruments
    - Review relevant literature and theories to design the questionnaire.
    - Submit the draft to an advisor and revise based on feedback.
    - Validate content with 3 experts using the Index of Item-Objective Congruence (IOC), selecting items with scores between 0.60–1.00.
    - Conduct a pilot test with 30 non-sample teachers to assess reliability using Cronbach's Alpha Coefficient.
    - Finalize and distribute the questionnaire.
4. Data Collection
    - Coordinate with relevant institutions to request cooperation.
    - Distribute and collect the questionnaires.
    - Verify and analyze the collected data.
5. Data Analysis
    - General information: Frequency and percentage.
    - Level of digital technology use: Mean and standard deviation (S.D.).
    - Comparisons based on education, work experience, and school size:

- One-Way ANOVA and pairwise comparison using Scheffe's method for significant differences.

6. Statistical Tools
   - Descriptive statistics: Percentage, mean, and S.D.
   - Reliability test: Cronbach's Alpha.
   - Hypothesis testing: One-Way ANOVA and Scheffe's method.

Step 2: Study of Guidelines for Using Digital Technology in Teaching Management

1. Informants
   - 2 experts selected via Purposive Sampling:
     - 1 Educational Administrator (Doctorate level, ≥5 years of experience).
     - 1 School Administrator (Master's level, ≥5 years of experience, expertise in educational technology).
2. Research Instrument
   - Structured Interview divided into:
     - Part 1: General information of informants.
     - Part 2: Guidelines for using digital technology in teaching.
     - Part 3: Recommendations for effective implementation.
3. Data Collection
   - Conduct structured interviews with selected experts.
4. Data Analysis
   - Analyze interview data qualitatively to identify themes and practical guidelines for using digital technology.

6. Research Results

Table 1: Mean, Standard Deviation, and Interpretation of Teachers' Use of Digital Technology for Teaching Management in Network Schools Group 30, Prawet District, Bangkok (n = 125).

	Digital Technology for Teaching Management	Level of Performance		Interpretation
		$\bar{x}$	S.D.	
1	Use of Digital Technology	4.32	0.60	High
2	Understanding Digital Technology	4.21	0.67	High
3	Evaluating Digital Technology	4.14	0.72	High
4	Creating Digital Technology	4.12	0.68	High
	Overall (X_{tot})	4.20	0.60	High

7. Summary of Results

From Table 1, the overall use of digital technology for teaching management among teachers in Network Schools Group 30, Prawet District, Bangkok, is at a high level ($\bar{x}$ = 4.20, S.D. = 0.60).
When considering each aspect, the mean scores from highest to lowest are as follows:

1. Use of Digital Technology: High ($\bar{x}$ = 4.32, S.D. = 0.60)
2. Understanding Digital Technology: High ($\bar{x}$ = 4.21, S.D. = 0.67)
3. Evaluating Digital Technology: High ($\bar{x}$ = 4.14, S.D. = 0.72)
4. Creating Digital Technology: High ($\bar{x}$ = 4.12, S.D. = 0.68)

Table 2: Comparison of the Use of Digital Technology for Teaching Management of Teachers in Network School Group 30, Prawet District Office, Bangkok, Classified by Education Level

	Digital Technology for Teaching Management	Bachelor's Degree (n=93)		Above Bachelor's Degree (n=32)			
		$\bar{x}$	S.D.	$\bar{x}$	S.D.	t	p
1	Use of Digital Technology	4.34	0.54	4.26	0.75	0.59	0.55
2	Understanding Digital Technology	4.18	0.62	3.95	0.81	1.50	0.13
3	Evaluating Digital Technology	4.25	0.63	4.25	0.63	1.05	0.29
4	Creating Digital Technology	4.20	0.68	3.98	0.82	1.36	0.18
Overall (X_{tot})		4.24	0.54	4.07	0.75	1.21	0.23

*p < .05

Analysis Result: The use of digital technology for teaching management does not significantly differ based on education level.

Table 3: Comparison of the Use of Digital Technology for Teaching Management of Teachers in Network School Group 30, Prawet District Office, Bangkok, Classified by Work Experience

	Digital Technology for Teaching Management	Less than 10 Years (n=34)		10 Years and Above (n=91)			
		$\bar{x}$	S.D.	$\bar{x}$	S.D.	t	p
1	Use of Digital Technology	4.08	0.43	4.41	0.63	-3.34*	0.01
2	Understanding Digital Technology	4.17	0.75	4.11	0.75	0.50	0.61
3	Evaluating Digital Technology	4.14	0.72	4.23	0.72	-0.77	0.43
4	Creating Digital Technology	4.21	0.51	4.12	0.79	0.81	0.41
Overall (X_{tot})		4.15	0.39	4.22	0.66	-0.69	0.49

*p < .05

Analysis Result: Overall, there is no significant difference. However, there is a significant difference in the use of digital technology between teachers with less than 10 years of experience and those with 10 or more years of experience.

Table 4: Comparison of the Use of Digital Technology for Teaching Management of Teachers in Network School Group 30, Prawet District Office, Bangkok, Classified by School Size

Digital Technology for Teaching Management	Source of Variance	df	ss	ms	f	p
1 Use of Digital Technology	Between Groups	2	5.30	2.65	8.03*	0.01
	Within Groups	122	40.26	0.33		
	Total	124	45.56			
2 Understanding Digital Technology	Between Groups	2	1.07	0.53	1.14	0.32
	Within Groups	122	57.59	0.47		
	Total	124	58.67			
3 Evaluating Digital Technology	Between Groups	2	1.49	0.74	1.67	0.19
	Within Groups	122	54.64	0.44		
	Total	124	56.14			
4 Creating Digital Technology	Between Groups	2	0.49	0.24	0.46	0.62
	Within Groups	122	64.97	0.53		

	Total	124	65.47			
Overall	Between Groups	2	1.53	0.76	2.13	0.12
	Within Groups	122	43.92	0.36		
	Total	124	45.46			

$p < .05$

Analysis Result: Overall, there is no significant difference based on school size. However, there is a significant difference in the use of digital technology at the $p < .05$ level.

8. Summary of Findings

1. Education Level: No significant differences in the use of digital technology for teaching management.
2. Work Experience: Significant differences in the use of digital technology between teachers with less than 10 years and 10 or more years of experience.
3. School Size: Significant differences in the use of digital technology by school size.

Analysis Results of the Use of Digital Technology for Teaching Management of Teachers in Network School Group 30, Prawet District Office, Bangkok from the synthesis of interviews with 3 experts, the researcher applied content analysis and summarized the findings as follows:
Use of Digital Technology: It is recommended to use online learning platforms such as Google Classroom, Microsoft Teams, or Zoom. These platforms enable students to access learning materials anywhere and anytime. Teachers can create content in various formats, enhancing student engagement.
Creation of Digital Technology: The development of digital learning media, such as instructional videos, infographics, and websites, is essential. These resources help increase students' interest and participation in learning. The use of AI in adaptive learning systems enables students to receive lessons tailored to their abilities, enhancing the effectiveness of learning.
Understanding Digital Technology: Teachers should utilize online teaching tools such as Moodle, Canvas, or Blackboard. These tools help teachers manage virtual classrooms and create accessible learning environments.
Evaluation of Technology: It is recommended to evaluate new technologies by testing them in classrooms and using shared evaluation data to assist in long-term decisions regarding technology adoption.

9. Discussion of the Research Results

The research results on the opinions of teachers in the Network School Group 30, Prawet District, Bangkok, reveal significant points to discuss as follows:

1. Use of Digital Technology for Learning Management:
   The overall ability and performance of teachers in using digital technology are found to be at a high level across four main areas: the use of digital technology, understanding digital technology, evaluating digital technology, and creating digital technology. Teachers are able to use various forms of technology such as internet communication, document management (Microsoft Word), basic application usage, and online collaboration via programs like Zoom, which enhances practical work and improves teaching quality. The research aligns with the approach of the Office of the Civil Service Commission (2018), which emphasizes the use of digital technology in government work to increase efficiency and value, as well as developing organizational systems to support Thailand 4.0 policies. Additionally, this is consistent with research by Amnat Chaisong (2021) and Kanat Thitakornphongstit (2022), who found that teachers' digital skills across different areas were at a high level. Therefore, digital skills are important both personally and professionally, as they promote learning, the development of learning materials, and effective collaboration in the digital age.
2. Comparison of Digital Technology Usage Based on Educational Qualifications, Work Experience, and School Size:
   The research reveals interesting differences among variables:
   - Educational Qualifications: There is no significant difference in the overall and detailed use of digital technology between teachers with different educational qualifications (bachelor’s

degree and higher). This is consistent with the research of Anthika Amnat Chaisong (2021), who found that digital skills among teachers with varying educational qualifications did not affect classroom management in the 21st century.

- Work Experience: Overall, there is no difference in the use of digital technology among teachers with varying levels of experience. However, when considering specific areas, there are statistically significant differences at the 0.05 level. This aligns with the research of Phisutthipa Metheekul (2018), which found that digital literacy development among teachers in the 21st century did not differ overall, but specific details might vary with experience.
- School Size: The overall use of digital technology by teachers in different-sized schools shows no difference. However, when examining specific aspects of digital technology use, there are statistically significant differences at the 0.05 level. This is likely due to varying levels of readiness, such as the availability of technology resources, personnel, and budget. Larger schools tend to have more resources than smaller or medium-sized ones. This finding aligns with research by Jarunan Phiewphang (2021), which indicates that digital leadership impacts differences in technology usage in schools of various sizes.

In summary, the overall use of digital technology by teachers in Network School Group 30 does not differ significantly when considering educational qualifications, experience, and school size. However, specific aspects may vary due to structural factors and the readiness of schools.

3. Interviews on Approaches to Using Digital Technology for Learning Management:
   - Use of Digital Technology: Teachers use online learning platforms like Google Classroom, Microsoft Teams, and Zoom to enhance accessibility to content, create diverse learning materials, and increase student participation. Applications like Kahoot, Quizizz, or Socrative are used for real-time assessment, and VR technology is employed to create immersive learning experiences that enhance long-term understanding and retention.
   - Creation of Digital Technology: Teachers develop programming skills to create specialized learning apps and digital learning materials, such as instructional videos, infographics, and websites, to make learning more engaging. AI is used in adaptive learning systems to tailor teaching to students' abilities.
   - Understanding Digital Technology: Teachers learn the basic use of technologies such as Microsoft Office and Google Workspace, and use online platforms like Moodle, Canvas, or Blackboard to manage virtual classrooms. They also study digital safety to protect data and ensure safe usage for students.
   - Evaluation of Digital Technology: Teachers gather student feedback to improve technology usage, analyze the impact of technology on learning outcomes (comparing pre- and post-usage results), and test new technologies in classrooms. They also share evaluation results to guide long-term technology adoption.

   In conclusion, teachers should continuously develop their digital skills in all dimensions to enhance teaching effectiveness, promote learning, and modernize learning processes to meet the needs of 21st-century students.

10. Suggestions

10.1. From the Research

1. Schools should organize activities or projects to encourage teachers to create digital technologies, focusing on digital media creation such as blogs, image and video sharing, and social media to support problem-solving.
2. Schools should implement the use of digital technology to assess the ability to distinguish reliable sources and appropriate referencing, which is an essential skill in digital evaluation.
3. Schools should provide more training or projects for teachers with less than 10 years of work experience in using digital technology.
4. Small schools should receive training on creating digital media, using technologies like Google Classroom, Microsoft Teams, Zoom, or apps such as Kahoot, Quizizz, or Socrative.

5. The relevant authorities should organize training or activities to help schools with lower digital technology usage improve their digital learning management.
6. Teachers with less than 10 years of experience should receive training on using digital technology for teaching, while those with 10 or more years of experience should focus on training in creating digital technologies for learning management.
7. The development of digital technology for learning management should prioritize smaller schools, followed by medium-sized schools and larger schools.

10.2. Suggestions for Future Research

1. Further studies should explore factors that affect teachers' digital skills, providing data to guide policy decisions or strategies for improving teachers' digital competence effectively.
2. Future research should focus on developing models to promote teachers' digital skills, serving as a guide for enhancing their proficiency in digital teaching methods.

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The Study of Student Support System Operation in the Suvarnabhumi Prakan Consortium under the Samut Prakan Secondary Education Area Office

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Abstract
This research focused on the operation of the student care and support system in Suvarnabhumi Prakan, under the Samut Prakan Secondary Educational Service Area Office. The objectives were to 1) examine the level of performance of the student care and support system, and 2) compare the level of operation across schools of different sizes within the same area. The sample consisted of 254 administrators and teachers. The research instrument was a questionnaire using Likert scale. Data analysis was conducted using mean, standard deviation, and One-Way ANOVA. The research findings were as follows: 1. The overall operation of the student care and support system in Suvarnabhumi Prakan, under the Samut Prakan Secondary Educational Service Area Office, was at a very high level. When considering each aspect, the average scores were ranked from highest to lowest in the following order. student referral, student support, individual student knowledge, and student screening; 2. A comparison of the operation of the student care and support system, categorized by school size, were difference.

Keywords: Student Care and Support System, Guidance, Student Affairs Office

1. Introduction

The issue of children and youth, as identified by various organizations, reveals that a portion of students in basic education and other levels exhibit undesirable behaviors. These include becoming overly engrossed in computer games to the point of obsession, imitating inappropriate behaviors such as violence depicted in games, making irresponsible decisions, easily accessing addictive substances, lacking psychological anchors, disregarding the importance of religion, and experiencing weakened family relationships. This underscores the significant role children and youth play in the nation's future development. Consequently, supporting children and youth to lead lives aligned with societal expectations is a critical national mission to enhance their quality of life, enabling them to grow into valuable members of society (Office of Academic and Educational Standards, 2017:1-4). Education serves as the foundation for achieving this goal.

Education is a fundamental right for all Thai citizens, which the state is obligated to provide. Its purpose is to develop individuals across all age groups comprehensively, fostering intellectual capital vital for skill development, desirable attributes, and competencies for careers and harmonious coexistence in society. This leads

to stability and national security, enabling the country to progress and compete on the global stage amidst the rapid changes of the 21st century. This aligns with the National Education Act of 1999, amended (Fourth Edition) in 2019, Article 24, which emphasizes the need for learning processes to account for individual differences. It aims to equip learners with the ability to apply knowledge to prevent and solve problems, think critically, act effectively, and instill morality, positive values, and desirable characteristics in all subjects. It also highlights collaboration with parents, guardians, and community members to develop learners to their fullest potential (Office of the National Education Council, 2019:3-8), under a concrete support system tailored to societal contexts.

The implementation of a student support system is an effective process that emphasizes transforming the roles and attitudes of administrators and teachers. This includes promoting students' physical, mental, intellectual, emotional, and social well-being. The system ensures that every student has at least one teacher who closely monitors their well-being, fosters strong relationships between teachers and parents, and builds a network connecting schools, homes, and communities. This collaborative network safeguards students, addressing their needs systematically and sustainably. Schools must organize activities that promote appropriate behavior, social responsibility, and safety. The five-step student support system includes: (1) identifying individual students, (2) screening students, (3) supporting students, (4) preventing and solving problems, and (5) referring students to appropriate services. This system aims to protect and care for students, with school administrators, teachers, and educational personnel serving as role models (Office of the Basic Education Commission, 2020:2) across all educational levels, from early childhood to primary and secondary education.

In secondary schools under the Samut Prakan Secondary Education Service Area Office, comprising 25 schools, efforts have been made to follow the Ministry of Education's urgent policy (Quick Win) on student safety and the "Bring Students Back to School" project. These initiatives include methods and processes to ensure students achieve quality learning outcomes, experience happiness, and are protected physically and mentally. They also focus on equipping students with self-protection skills in a challenging social environment. Schools under the Samut Prakan Secondary Education Service Area Office have adhered to policies, employing the student support system with cooperation from all stakeholders, ensuring close monitoring and regular observation of student behaviors. This enables timely prevention and intervention (Report on the Progress of Urgent Policies of the Office of the Basic Education Commission, Fiscal Year 2022, Samut Prakan Secondary Education Service Area Office, 2022).

Given the above rationale and importance, the researcher is interested in studying the implementation of the student support system in schools under the Suvarnabhumi Prakarn Secondary School Cluster, part of the Samut Prakan Secondary Education Service Area Office. The study aims to examine the levels of implementation of the student support system and compare these levels across schools of different sizes within the Suvarnabhumi Prakarn Secondary School Cluster.

2. Research Objectives

1. To study the level of implementation of the student support system in schools under the Suvarnabhumi Prakarn Secondary School Cluster, affiliated with the Samut Prakan Secondary Education Service Area Office.
2. To compare the levels of implementation of the student support system in schools under the Suvarnabhumi Prakarn Secondary School Cluster, affiliated with the Samut Prakan Secondary Education Service Area Office, categorized by school size.

3. Research Hypothesis

The levels of implementation of the student support system in schools under the Suvarnabhumi Prakarn Secondary School Cluster, affiliated with the Samut Prakan Secondary Education Service Area Office, differ across schools of varying sizes: extra-large, medium, and small.

4. Literature Review

The research on "A Study of the Implementation of the Student Support System in the Suwannabhumi-Prakan School Cluster under the Samut Prakan Secondary Education Service Area Office" examined documents, concepts, theories, and related studies as follows:

Danphrai Simakham (2021: 17) stated that the student support system refers to a systematic process of assisting students. It involves clear steps and tools, with homeroom teachers playing a key role in collaboration with all stakeholders both within and outside the school. The system aims to prevent and resolve student problems and to promote their development so they can live happily in society.

Thairath Wongthong (2020) studied the problems and guidelines for implementing the student support system in small schools under the Secondary Education Service Area Office, Zone 32. The research revealed that the overall operation and each aspect were at a moderate level. When considering each aspect, the highest average was in the area of student referral, followed by prevention and problem-solving. The lowest average was in the student screening process.

Wutthipong Phanthiwa (2020) studied the conditions, problems, and development approaches for the student support system in schools under the Secondary Education Service Area Office, Zone 21. The findings indicated differences in operation depending on the school size.

Thatchakorn Ngamloet, Phra Maha Suphot Sumetho, and Phra Kru Pichit Suphakan (2019) researched the effectiveness of implementing the participatory student support system in schools under the Secondary Education Service Area Office, Zone 12. The findings revealed that the overall effectiveness and the effectiveness in all five aspects were at the highest level.

Chanchai Thairat (2018) studied the management of the student support system to foster good character in students at Chiang Rai Witthayakhom School in Mueang Chiang Rai District. The study found that the overall level of student support system management, particularly in getting to know students individually, was at the highest level.

Nisakorn Laokhetkit (2017) studied the development guidelines for the student support system at Ban Bueng Lom School in Khlong Lan District, Kamphaeng Phet Province. The findings revealed that the overall operation of the system, especially in student development promotion, was at the highest level.

Terrence J. Lee-St. John and others (2018) studied the long-term impacts of systematic student support at the elementary school level, focusing on reducing school dropout rates. The findings indicated that dropping out of high school negatively affects students' employment, lifelong income, and physical health. High school dropouts often fail to complete their education for complex reasons that are evident before reaching legal adulthood.

In the research on the implementation of the student support system in the Suwannabhumi-Prakan School Cluster under the Samut Prakan Secondary Education Service Area Office, school administrators, homeroom teachers, guidance counselors, parents, and the community were involved in planning and providing support for students' behavior. Emphasis was placed on organizing classroom activities, supplementary activities, and extracurricular activities tailored to the students' potential and abilities. Schools must closely manage the student support system in five key areas Knowing students individually, screening students, promoting student development, Preventing and solving problems, and Referring students. These methods will lead to guidelines for improving the student support system in the Suwannabhumi-Prakan School Cluster under the Samut Prakan Secondary Education Service Area Office.

5. Research Methodology

The research titled "Study on the Implementation of the Student Care System in Suvarnabhumi Prakan Educational Network under the Samut Prakan Secondary Educational Service Area Office" was conducted using the following methodology:

5.1. Population

The population consisted of administrators and teachers under the Samut Prakan Secondary Educational Service Area Office for the 2022 academic year. This included 7 schools within the Suvarnabhumi Prakan Educational Network, totaling 741 individuals (Samut Prakan Secondary Educational Service Area Office, 2022).

5.2. Sample Group

The sample group included administrators and teachers from 7 schools under the same office for the 2022 academic year, with a total of 254 participants.

5.3. Data Collection Instruments

The data collection tool was a questionnaire, developed and refined by the researcher based on academic literature and relevant research. The questionnaire comprised:

1. Part 1: Demographic data of respondents, structured as a checklist.
2. Part 2: Questions related to the implementation of the student care system in schools within the Suvarnabhumi Prakan Educational Network, using a 5-point Likert rating scale.

5.4. Instrument Development

The development of the questionnaire involved the following steps:

1. Review of Literature: The researcher reviewed relevant concepts and theories based on the research framework related to the student care system.
2. Design: The questionnaire was divided into two parts:
    - Part 1: Demographics of respondents, including school size, structured as a checklist.
    - Part 2: Implementation aspects of the student care system, focusing on five areas:
        1. Knowing individual students
        2. Screening students
        3. Supporting students
        4. Preventing and solving student problems
        5. Referring students

      Each question used a 5-point Likert scale: Very High, High, Moderate, Low, Very Low.
3. Expert Review: The draft questionnaire was submitted to the research advisor for review and revised based on feedback.
4. Validation by Experts: Three experts, holding doctoral degrees in educational administration, assessed the content validity and language appropriateness. The Index of Item-Objective Congruence (IOC) was calculated, and questions with an IOC score between 0.60 and 1.00 were selected for use.
5. Pilot Testing: The revised questionnaire was tested with teachers outside the sample group.
6. Reliability Analysis: The reliability of the questionnaire was analyzed using Cronbach’s Alpha Coefficient, resulting in a reliability score of 0.945.
7. Data Collection: The finalized questionnaire was distributed to the sample group.

5.5. Data Collection Procedure

The researcher coordinated with the Graduate School, Faculty of Education and Liberal Arts, Suvarnabhumi Institute of Technology, to issue a formal request for cooperation in data collection. Questionnaires were distributed to administrators and teachers, followed by reminders to ensure all questionnaires were returned.

5.6. Data Analysis

A total of 254 questionnaires were returned (100%). The data was analyzed using statistical software:

- Part 1: Frequency and percentage analysis for demographic data.
- Part 2: Comparative analysis of the implementation of the student care system by school size, using mean and standard deviation. Scheffe's method was employed for pairwise comparisons in case of significant differences.

The five implementation areas were analyzed with a 5-point Likert scale, with interpretations as follows (Boonchom Srisa-ard, 2017):

- 4.51–5.00: Very High
- 3.51–4.50: High
- 2.51–3.50: Moderate
- 1.51–2.50: Low
- 1.00–1.50: Very Low

5.7. Statistical Analysis

The following statistical methods were used:

1. Instrument Quality Assessment:
    - IOC for content validity.
    - Cronbach's Alpha for reliability.
2. Descriptive Statistics:
    - Percentage
    - Mean
    - Standard Deviation
3. Hypothesis Testing:
    - One-way ANOVA to compare perceptions of implementation by school size.
    - Scheffe's method for pairwise comparisons in cases of significant differences.

6. Research Findings Summary

1. Results of Data Analysis on the Implementation of the Student Support System
The analysis focuses on the implementation of the student support system within Suvarnabhumi Prakan Educational Network under the jurisdiction of the Samut Prakan Secondary Educational Service Area Office.

Table 1: Displays the mean, standard deviation, and interpretation of the implementation of the student support system within Suvarnabhumi Prakan Educational Network under the Samut Prakan Secondary Educational Service Area Office. The overall interpretation is provided.

(n=254)

Rank	Implementation of the Student Support System	Level of Practice		terpretation
		$\bar{x}$	S.D.	
1	Student Referral	4.71	0.44	Highest
2	Student Promotion	4.69	0.43	Highest
3	Prevention and Resolution of Student Issues	4.68	0.47	Highest
4	Student Screening	4.67	0.44	Highest
5	Individual Student Recognition	4.66	0.48	Highest
Overall (X_{tot})		4.68	0.45	Highest

From Table 1, it was found that the overall implementation of the student support system in Suvarnabhumi Prakarn Educational Network, under the Secondary Educational Service Area Office of Samut Prakan, was at the highest level When considering each aspect in descending order of mean scores, student referral ranked the highest at the highest level, followed by student promotion, also at the highest level, and individual student recognition, which was at the highest level as well, respectively.

Table 2: Comparison of the Implementation of the Student Support System in the Suvarnabhumi Prakarn Educational Network under the Secondary Educational Service Area Office of Samut Prakan, Categorized by School Size

Implementation of the Student Support System	แหล่งความแปรปรวน	**SS**	**df**	**MS**	**F**	**p**
1. Individual Student Awareness	Between Groups	29.298	2	14.649	119.466	.000
	Within Groups	30.778	251	.123		
	Total	60.076	253			
2. Student Screening	Between Groups	19.584	2	9.792	81.268	.000
	Within Groups	30.243	251	.120		
	Total	49.826	253			
3. Student Development Promotion	Between Groups	20.745	2	10.373	97.295	.000
	Within Groups	26.759	251	.107		
	Total	47.505	253			
4. Problem Prevention and Resolution	Between Groups	20.236	2	10.118	70.150	.000
	Within Groups	36.203	251	.144		
	Total	56.439	253			
5. Student Referral	Between Groups	20.723	2	10.362	87.798	.000
	Within Groups	29.622	251	.118		
	Total	50.345	253			
Overall	**Between Groups**	**21.969**	**2**	**10.985**	**121.131**	**.000**
	Within Groups	**22.762**	**251**	**.091**		
	Total	**44.731**	**253**			

Statistically Significant at the .05 Level

Table 2 shows that administrators and teachers from schools of different sizes have differing opinions regarding the implementation of the student support system in the Suvarnabhumi-Prakan cluster, under the jurisdiction of the Secondary Educational Service Area Office of Samut Prakan. These differences are statistically significant at the .05 level, both overall and across individual aspects.

The research findings revealed that the implementation of the student support system in the Suvarnabhumi-Prakan cluster, under the Secondary Educational Service Area Office of Samut Prakan, differs significantly by school size, both overall and across individual aspects, at the .05 statistical significance level.

The pairwise comparison using Scheffe's method indicated that the implementation of the student support system across all five aspects differed significantly at the .05 level between two pairs: small schools and extra-large schools, and medium-sized schools and extra-large schools. For other pairs, no statistically significant differences were observed.

7. Discussion of Research Findings

The research findings from school administrators and teachers in the Suvarnabhumi-Prakan school cluster, under the Secondary Educational Service Area Office of Samut Prakan, present significant aspects for discussion, as follows:

Implementation of the Student Support System

The implementation of the student support system in the Suvarnabhumi-Prakan cluster, both overall and by individual aspects, was found to be at the highest level. Analyzing each aspect, the rankings of average scores from highest to lowest are: student referrals, student development, prevention and problem-solving, student screening, and individualized understanding of students.

This may be attributed to the adherence of schools in this cluster to the standardized practices outlined in the 2017 Secondary School Operational Standards (revised in 2019). These schools demonstrate an effective and tangible student support system, with up-to-date student information, comprehensive planning, and efficient management.

This aligns with the research of Tatchakorn Ngamlerd, Phra Maha Suphot Sumetho, and Phra Khru Phichit Suphakan (2019), who studied the effectiveness of a participatory student support system in schools under the Secondary Educational Service Area Office 12. Their findings also indicated that the overall and individual aspects of the system were at the highest level. Additionally, the results are consistent with Danphrai Simakham (2021), who explored effective strategies for student support systems in primary schools under the Office of the Basic Education Commission in northeastern Thailand. Their findings showed that the strategies were highly appropriate and feasible.

The researcher believes that the consistently high performance of the student support system is due to its long-standing integration as a routine part of school operations for over 20 years. As a vital function, it supports the schools' mission and meets internal and external quality assurance requirements.

Comparison of Implementation by School Size
Administrators and teachers from schools of varying sizes in the Suvarnabhumi-Prakan cluster had significantly different opinions on the implementation of the student support system, both overall and in individual aspects, at the .05 significance level.

This disparity may stem from the following factors:

Resources: Larger schools may have more personnel, budgets, and facilities, enabling them to manage the student support system more comprehensively. Smaller schools, on the other hand, may face resource constraints.

Student Numbers and Individualized Care: Smaller schools often have fewer students, allowing for more in-depth and individualized care. In contrast, larger schools require more complex management structures to ensure comprehensive support for all students.

Work Environment: Larger schools may have more systematic and well-defined management processes, while smaller and medium-sized schools may exhibit greater flexibility and adaptability.

Communication and Coordination: Communication in larger schools can be more complex compared to smaller schools, which often have quicker and more straightforward communication channels.

These factors explain why administrators and teachers from schools of different sizes have varying perspectives on the student support system, both overall and in individual aspects.

This is consistent with the findings of Wuttipong Phantiwa (2020), who studied the conditions, challenges, and developmental approaches for student support systems in schools under the Secondary Educational Service Area Office 21. The study revealed differences based on school size. The researcher posits that differences in practice levels are due to the equal workload across schools but varying personnel numbers, resulting in different capacities to implement the system effectively.

8. Recommendations Based on the Research

8.1. Recommendations for Further Research

1. Developing Student Support System Models:
   Research should be conducted on developing models for student support systems under the Ministry of Education and other agencies providing basic education. This is necessary because the current student support system, established by the Department of General Education since 2000, may no longer align with the contemporary social context. Updates could include redefining student groups for screening, revising screening criteria, and adapting support activities to better suit current societal conditions.
2. Utilizing Mixed-Method Research:
   Future studies should employ mixed-method research, combining quantitative and qualitative approaches, to provide deeper insights into the student support systems.
3. Examining Factors Influencing Implementation:
   Research should explore the factors affecting the implementation of student support systems in schools within the Suvarnabhumi Prakan School Network, under the Samut Prakan Secondary Educational Service Area Office. The differences in school sizes highlight the need for such studies.
4. Relationship Between Leadership Styles and Implementation:
   Studies should investigate the relationship between school leadership styles and the implementation of student support systems in the Suvarnabhumi Prakan School Network to understand their impact on effectiveness.

8.2. Recommendations for Application of Research Findings

1. Personalized Student Profiles:
   Schools should establish a comprehensive data recording system to capture individual student profiles aligned with support system criteria. The data should be updated every semester to ensure relevance.
2. Student Screening Procedures:
   Schools should define clear support categories, such as academic performance, behavior, and family circumstances. These categories must include behavioral or tangible criteria to effectively classify students into three groups:
   - "Trusted Group": Students requiring minimal intervention.
   - "Concerned Group": Students needing moderate support.
   - "Close Monitoring Group": Students requiring immediate and ongoing attention.
3. Student Development Promotion:
   Schools should assign specific personnel to organize activities and projects aimed at maximizing students' potential. The goal is to increase the number of students in the normal group and reduce those in at-risk or problem categories.
4. Problem Prevention and Remediation:
   Schools should organize additional remedial activities to address academic challenges faced by students more comprehensively.
5. Student Referrals:
   Schools should establish a systematic referral process that includes clear communication between the referring teacher and the receiving teacher. For referrals involving external organizations, parental and student consent must be documented.

8.3. Guidance Personnel Allocation

The Office of Basic Education or the Secondary Educational Service Area Office should provide adequate staffing of qualified guidance counselors in schools. These counselors should oversee and directly manage the student support systems for maximum effectiveness.

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The Strategic Management of Administrators in the Bang Bo 2 School Group, Under the Samut Prakan Primary Educational Service Area Office 2

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Abstract
This research on the strategic management of administrators in the Bang Bo 2 school group, under the Samut Prakan Primary Educational Service Area Office 2, as perceived by teachers, aims to: 1) examine the strategic management of administrators in the Bang Bo 2 school group, under the Samut Prakan Primary Educational Service Area Office 2, and 2) compare the strategic management of administrators in the Bang Bo 2 school group under the Samut Prakan Primary Educational Service Area Office 2, categorized by school size. The sample consisted of 110 teachers. The research instrument was a questionnaire using a 5-point Likert scale, divided into two sections. Section 1 gathered general demographic data of the respondents, while Section 2 assessed the strategic management of administrators in the Bang Bo 2 school group, under the Samut Prakan Primary Educational Service Area Office 2. The reliability coefficient was 1.00. Statistical methods used for data analysis included frequency, percentage, mean, standard deviation, and dependent t-test. The research findings were as follows: The overall and individual aspects of strategic management by administrators in the Bang Bo 2 school group, under the Samut Prakan Primary Educational Service Area Office 2, were rated at a high level. The rankings, from highest to lowest average score, were as follows: strategic evaluation and control, strategy implementation, strategy formulation, and environmental analysis. The comparison of strategic management by administrators in the Bang Bo 2 school group, under the Samut Prakan Primary Educational Service Area Office 2, based on school size, revealed a statistically significant difference at the .05 level, with medium-sized schools demonstrating a higher level of strategic management than small schools.

Keywords: Strategic Management, Strategic Planning, Organizational Analysis

1. Introduction

In the rapidly changing global landscape driven by globalization and advancements in science and technology, unrestricted and widespread communication has become crucial for all nations within the global community to prepare for change. In this context, the Thai government has designated the enhancement of national competitiveness as a national priority to support its strategic goals of fostering national security and a robust economy. Human resource development plays a critical role in preparing the population to cope with external pressures. Education, as a key instrument, contributes to the development of individuals with the potential to compete in a dynamic society and economy. Thus, the development of high-quality human resources is a

fundamental foundation for advancing economic and social progress, enhancing competitiveness, and achieving a sustainable presence on the global stage (Office of the Education Council Secretariat, 2020).

Strategic management is a vital process that enables organizations to respond effectively to changes in technology, economy, law, politics, and social-cultural trends. Strategic planning serves as a critical step in this process by establishing long-term goals and adapting to continuously evolving environments. Administrators play an essential role in setting objectives, analyzing data, and making strategic decisions to ensure efficient and sustainable operations. Implementing strategic management principles allows organizations to review and refine strategies, fostering competitiveness and long-term resilience. Administrators are encouraged to develop adaptability and agile team management skills to overcome challenges presented by diverse situations effectively.

Given these reasons and their significance, the researcher, as a teacher in Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2, is interested in studying the strategic management practices of administrators in this cluster based on teachers' perceptions. The study aims to assess the level of strategic management among administrators and provide guidelines for enhancing their strategic management practices. These improvements are intended to meet the administrative goals and elevate the efficiency and effectiveness of student development outcomes.

2. Research Objectives

1. To examine the strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2.
2. To compare the strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2, categorized by school size.

3. Research Hypothesis

In this study, the researcher hypothesizes that: Strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2 differ when categorized by school size.

4. Literature Review

The research on strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2 involved reviewing relevant theories, concepts, and prior studies as follows:

Yongyuth Songpayom (2022) defines strategy as a systematic plan developed through the analysis of internal and external factors, including environmental impacts. Strategies serve as a roadmap for organizational management, aiming to address policy objectives with measurable and tangible results.

Janista Sombun (2022) describes strategy as a method of operation that employs diverse techniques. Administrators need extensive knowledge and expertise to establish long-term organizational goals and allocate resources effectively, ensuring the organization achieves its objectives efficiently.

Pornsak Urajachatratt (2020) emphasizes the significance of strategies in driving organizations, particularly in the New Normal era. Administrators must meticulously plan to address unforeseen events. Effective strategy formulation prepares organizations to adapt to rapidly changing circumstances and ensures efficient performance evaluation and management.

Kriangsak Chareonwongsak (2020) highlights strategic management as a critical tool for minimizing losses and clarifying workflows. Strategies enable administrators to establish appropriate frameworks for various situations efficiently and effectively.

Amornrat Sripo (2018) describes strategy as a proactive approach focused on clear objectives and environmental analysis. This approach ensures that organizations operate effectively and meet their predetermined goals.

Sekson Sakonthawat (2017) defines strategy as a proactive planning process that considers resource mobilization, risk reduction, and creating a competitive edge. Administrators must analyze both internal and external factors to align operations with organizational goals.

I Yom (2021) underscores the importance of strategies during crises or unexpected events. Effective strategies require brainstorming and comprehensive planning, enabling organizations to operate continuously and without interruption.

Dan J. Sanders (2020) likens strategies to a compass that sets the organization's direction. Strategies must be measurable and evaluative to guide organizations toward future goals confidently.

Conclusion Strategies are systematic operational plans developed through analyzing internal and external organizational factors to achieve objectives effectively. They are crucial tools for guiding organizations through adaptation and change, minimizing risks, and enhancing operational efficiency. Strategies provide a structured approach to ensure organizational goals are met with maximum effectiveness.

5. Research Methodology

This study aims to examine the strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2, based on teachers' perceptions. The objectives are to study and compare the strategic management practices categorized by school size. The research methodology includes the following steps:

5.1. Population and Sample Used in the Research

1. Population
   The population for this study consists of teachers from the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2, totaling 215 individuals.
2. Sample
   The sample size was determined using the G*Power software (version 3.1.9.2). The parameters set were:
   - Statistical test: Correlation Bivariate Normal Model
   - Power of test: 0.99
   - Level of significance: 0.01
   - Effect size (medium): 0.3 (Cohen, 1977, as cited in Nipitphon Sanitluea, Watchareeporn Satpet, and Yada Napa-arak, 2018).

   Based on these criteria, the required sample size was calculated to be 110 participants.

Table 1: presents the distribution of the population and sample of teachers categorized by school

School Size	Teachers	
	Population (Teachers)	Sample (Teachers)
Small Schools	70	36
Medium Schools	145	74
Total	215	110

6. Research Instruments

The instrument used for data collection in this study is a questionnaire developed and refined by the researcher based on academic literature and related research. The details of the questionnaire are as follows:

1. Questionnaire Structure
    - Part 1: Demographic Information
      This section comprises checklist-style questions to gather basic information about the respondents.
    - Part 2: Strategic Management Practices
      This section focuses on the strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2. The questions are designed using a 5-point Likert scale, where:
        - 5 = Very High Level of Strategic Management
        - 4 = High Level of Strategic Management
        - 3 = Moderate Level of Strategic Management
        - 2 = Low Level of Strategic Management
        - 1 = Very Low Level of Strategic Management

7. Development of Research Instruments

The development process of the questionnaire used for data collection was conducted in the following steps:

7.1. Literature Review

Reviewed relevant documents, theories, and research related to the strategic management of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2 based on teachers' perceptions.

7.2. Questionnaire Design

Developed the questionnaire based on the research framework, divided into two sections:

- Section 1: Demographic Information of Respondents
  Questions included position status, school size, and work experience, designed as checklist-style questions.
- Section 2: Strategic Management Practices
  Questions covered four areas:
    1. Environmental Analysis
    2. Strategy Formulation
    3. Strategy Implementation
    4. Strategy Evaluation and Control
       Responses were measured using a 5-point Likert scale: Very High, High, Moderate, Low, and Very Low.

7.3. Review by Advisors

Submitted the completed questionnaire to academic advisors for review and revised it based on their feedback.

7.4. Expert Validation

Presented the questionnaire to three experts in educational administration for content validity and language appropriateness. The experts were:

- Dr. Praphas Kongchan (Deputy Director, Kanchanaburi Primary Educational Service Area Office 4)
- Dr. Wutthiphong Wongchu (Director, Ban Kaeng Khro Phai School)
- Dr. Chaiwat Tangphong (Director, Secondary Educational Service Area Office Chaiyaphum)

Content validity was assessed using the Index of Item Objective Congruence (IOC) method with the following scale:

- +1 = Definitely measures the objective
- 0 = Uncertain if it measures the objective
- -1 = Definitely does not measure the objective

The formula used:

$$IOC = \frac{\sum R}{N}$$

where IOC = Index of Item Objective Congruence, R = Total scores from experts, and N = Number of experts. Items with IOC values between 0.60 and 1.00 were selected for use.

7.5. Revision and Pilot Testing

Revised the questionnaire for clarity and administered a pilot test to teachers who were not part of the sample group.

7.6. Reliability Testing

Analyzed the reliability of the questionnaire using Cronbach's Alpha Coefficient method (Cronbach, 1990: 202-204).

7.7. Final Questionnaire Implementation

Used the finalized questionnaire for data collection with the sample group.

7.8. Data Collection

For the data collection process, the researcher conducted the following steps:

1. Coordinated with the Graduate Studies Office, Faculty of Education and Liberal Arts, Suvarnabhumi Institute of Technology, to request an official letter for permission to collect research data.
2. Delivered the questionnaires along with a cooperation request letter to administrators and teachers in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2.
3. Collected and followed up on questionnaires that were not yet returned.
4. Verified the data from the completed questionnaires.
5. Analyzed the collected data.

7.9. Data Analysis

The data analysis was conducted in the following steps:

1. Reviewed all returned questionnaires for accuracy and completeness, selecting only the valid ones for analysis.
2. Scored each questionnaire item based on the defined criteria.
3. Analyzed the data using a computer with statistical software, as follows:
    - 3.1 General Information Analysis: Frequency and percentage distribution of respondents by school size.
    - 3.2 Strategic Management Levels: Analyzed using mean ($\bar{X}$) and standard deviation (S.D.).
    - 3.3 Comparative Analysis: Compared strategic management practices of administrators categorized by school size (small and medium schools) using the T-Test statistic.

7.10. Statistical Tools

1. Statistics for Instrument Quality Assessment:
    - 1.1 Index of Item-Objective Congruence (IOC): To evaluate content validity.
    - 1.2 Reliability: Assessed using Cronbach's Alpha Coefficient method (Cronbach, 1990: 202-204).
2. Statistics for Data Analysis:
    - 2.1 Percentage (%).
    - 2.2 Mean ($\bar{X}$).
    - 2.3 Standard Deviation (S.D.).
3. Statistics for Hypothesis Testing:
    - 3.1 Analysis of Strategic Management Levels: Used mean ($\bar{X}$) and standard deviation (S.D.) to assess administrators' strategic management practices based on teachers' perceptions.
    - 3.2 Comparative Analysis: Compared strategic management practices by school size (small and medium) using the T-Test statistic.

8. Research Findings

Table 2: Mean, Standard Deviation, Interpretation, and Ranking of Strategic Management Practices Based on Teachers' Perceptions (n=110)

Strategic Management Practices		Level of Performance		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Environmental Analysis	4.01	0.79	High	4
2	Strategy Formulation	4.04	0.78	High	3
3	Strategy Implementation	4.08	0.76	High	2
4	Strategy Evaluation and Control	4.11	0.71	High	1
Overall (X_{tot})		4.06	0.73	High	

From Table 2, the strategic management practices of administrators in the Bang Bo 2 School Cluster, as perceived by teachers, are rated overall and across all aspects as "High." Ranking from highest to lowest mean scores:

1. Strategy Evaluation and Control
2. Strategy Implementation
3. Strategy Formulation
4. Environmental Analysis

Table 3: Comparison of Strategic Management Practices by School Size

Strategic Management Practices		Small Schools (n=36)		Medium School (n=74)			
		$\bar{x}$	S.D.	$\bar{x}$	S.D.	t	p
1	Environmental Analysis	3.01	0.44	4.52	0.28	-18.86	00
2	Strategy Formulation	3.06	0.62	4.54	0.29	-18.33	0.00
3	Strategy Implementation	3.12	0.42	4.57	0.27	-18.58	0.00
4	Strategy Evaluation and Control	3.22	0.39	4.56	0.26	-18.25	0.00

Overall (X_{tot})	3.10	0.54	4.54	0.25	-25.40	0.00

*p < .05

From Table 3, it was found that the strategic management practices of administrators, categorized by school size, differ significantly at the .05 level. Teachers in medium-sized schools rated administrators' strategic management practices higher than those in small schools across all aspects.

9. Summary of Findings

1. Overall, the strategic management practices of administrators in the Bang Bo 2 School Cluster, based on teachers' perceptions, are rated as "High." Strategy Evaluation and Control ranks the highest, followed by Strategy Implementation, Strategy Formulation, and Environmental Analysis.
2. When categorized by school size, medium-sized schools demonstrate significantly higher levels of strategic management practices compared to small schools in all aspects.

10. Discussion of Research Findings

The findings of this research on teachers' perceptions of the strategic management practices of administrators in the Bang Bo 2 School Cluster under the Samut Prakan Primary Educational Service Area Office 2 reveal several important insights:

1. Overall Strategic Management Practices
   The strategic management practices of administrators were rated as "High" overall and across all four dimensions:
   1. Strategy Evaluation and Control (highest mean)
   2. Strategy Implementation
   3. Strategy Formulation
   4. Environmental Analysis (lowest mean)

   This highlights the importance of strategic management in achieving educational goals amidst internal and external changes. The emphasis on workshops and the development of 5-year educational plans by the governing body has contributed to the administrators' focus on analyzing internal and external environments. These actions lead to effective strategic planning and resource allocation aligned with the needs of schools, communities, and governing agencies.
2. Dimension-Specific Insights
   - Environmental Analysis:
     Administrators effectively utilized SWOT analysis techniques to define school vision, mission, and goals. However, creating awareness among teachers about the importance of analyzing current conditions for school improvement ranked lowest. This aligns with research by Chonthicha Romphosri (2018) and Jakkrit Panphoka (2017), which emphasize the need for comprehensive environmental analysis.
   - Strategy Formulation:
     Plans, projects, and activities were deemed clear and well-suited to the schools' contexts. Revisiting and refining strategies ensured alignment with goals, reflecting research by Thapana Chinpaisan (2017), who highlighted the importance of long-term strategic planning.
   - Strategy Implementation:
     Administrative flexibility and clear organizational structures contributed to efficient implementation. These findings align with Balian (2020), who emphasized adaptive management and transparency in strategy execution.
   - Strategy Evaluation and Control:
     Administrators effectively monitored and evaluated projects, providing actionable recommendations for improvement. This supports the findings of Thapana Chinpaisan (2017) and Thanachai Sukwanich (2017), who stressed the importance of feedback loops in strategic management.

3. Comparison by School Size
    - Teachers in medium-sized schools rated administrators' strategic management practices significantly higher than those in small schools. This disparity could stem from differences in resource availability and organizational readiness, aligning with research by Terdsak Thongyoi (2022) and Sakda Tatsana (2021), who found that strategic management practices vary based on school size and resource context.

11. Recommendations

1. For Practice
    - Administrators should raise awareness among teachers about the importance of analyzing current school conditions to improve quality across all dimensions.
    - Clear delegation of responsibilities for project and activity implementation is necessary.
    - Schools should create comprehensive operation manuals aligned with organizational structures.
    - Assign responsible personnel to monitor and evaluate strategic implementation clearly.
2. For Future Research
    - Investigate factors influencing strategic management in the Bang Bo 2 School Cluster.
    - Explore strategic leadership behaviors of school administrators in the Bang Bo 2 School Cluster.

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Implementation of Baklas Operation from the Lens of Elementary Teachers in Marawi City: Basis for a Policy Brief

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Abstract
Baklas operation is a DepEd order that mandates that walls shall remain bare and devoid of posters, decorations, or other posted materials. This study investigates the perceptions of elementary teachers in Marawi City regarding the Department of Education (DepEd) Order No. 21, s. 2023, commonly referred to as the Baklas Operation, which mandates the removal of classroom decoration. Utilizing a quantitative research design, the study involved 100 elementary teachers from various schools near MSU-Main Campus, Marawi City. Data were collected during the academic year 2024-2025 and through a self-structured questionnaire. Data was analyzed using frequency counts, percentages, and weighted mean. The findings revealed that teachers are generally aware of the Baklas Operation and express positive and negative perceptions about its impact on the teaching and learning process. While some teachers acknowledge potential benefits in minimizing distractions, others highlight challenges in the implementation of Baklas Operation, such as reduced student engagement and motivation to participate in the class discussion, difficulty in executing the lessons, and difficulty in the discussion because of limited materials in the classroom's walls. The study concludes with recommendations for educators and policymakers to consider the enhancement of the Baklas Operation, which should focus on the intermediate level, and the primary level should have posted materials because they are visual learners, but it should be limited to educational devices only, for student learning outcomes, emphasizing the need for a balanced approach to classroom design that fosters an effective learning atmosphere.

Keywords: Awareness, Baklas Operation, DepEd Order No.21, S.2023, Elementary Teachers, Implementation, Perceptions

1. Introduction

Children spend most of their time in the classroom, so the physical environment dramatically impacts learning. Students usually find a comfort zone, and the classroom is one of the places where children often spend most of their time. According to the findings of their descriptive study, pupils' learning is significantly impacted by the classroom setting. While poorly designed classrooms have an adverse effect on students' learning, well-organized and decorated classrooms have a beneficial effect on student learning. Ryan (2016) argued in his study that a well-designed classroom has a good effect on students' achievement and that the classroom plays a crucial role in the students' learning.

However, in this research, the researchers argued that removing decorations inside the classroom is effective in the teaching and learning process. Hence, in this study, the researchers proposed that Baklas Operation or removing the classroom decoration has a positive impact on the teaching and learning process.

Furthermore, the Department of Education (DepEd) released a memorandum that states "Classroom walls shall remain bare and devoid of posters, decorations, or other posted materials. Classrooms should not be used to stockpile materials and should be clear of other unused items or items for disposal". However, some teachers wondered what "unnecessary" decorations that does it mean since the decoration of the classroom is part of learning and encourages the students to learn. In this context, the researchers wanted to explore elementary teachers' perceptions regarding the controversial policy of the released DepEd Order No. 21, s. 2023 (Baklas Operation).

Further, The Department of Education's directive for all public schools to declutter classrooms and remove unnecessary artwork (Tuazon, 2023) has sparked numerous complaints from teachers. Teachers believe that wall decorations are vital tools and aids in learning. Accordingly, while the focus of the Baklas operation of the DepEd order is to concentrate, it failed to consider that students need to be engaged and motivated inside the classroom to participate actively and to learn.

The learning environment involves materials that can be seen and touched as a part of the student's learning. According to Malik and Rizvi (2018), there are two main components in a classroom setting: human and physical. Teaching supplies, technical equipment, curriculum, training, and instruction, as well as the actual setting or learning place, are among the physical components, according to Balog (2018). Accordingly, the human component refers to student and teacher interaction. Moreover, most scholars agree that students' learning varies with the physical environment, which should impel the students' urge to learn. Classroom decoration has a significant impact on the learning acquisition of the learners. The classroom environment's layout and ambiance can affect how students interact, study, and acquire knowledge (Reinsech, 2018).

As David Rode (2021) mentioned, too many classroom decorations can distract the pupils during discussion, overloading their brains and getting in the way of acquiring knowledge. Moreover, several other recent studies have concluded that students can only store a few pieces of information one at a time, which is why too many wall decorations can affect the pupils' learning (Pedro & Panderirada, 2020; Barrett, 2015). Similarly, in a study on how classroom displays can impact students' learning, psychology researchers Fisher, Godwin, and Seltman (2014) of Carnegie Mellon University discovered that children in heavily decorated classrooms were more distracted, spent more time off-task, and showed smaller learning gains than in classrooms without decorations.

However, most researchers agreed that wall decorations must be meaningful. They can convey information that is either important or interesting, and that can help the students become involved. Barrett (2015) suggested that teachers should involve the students in the process of designing the classroom. He also suggested that the displays could be the pupils' work for them to be motivated and to get their interest.

Further, many researchers have found that the classroom environment has a great impact on students' learning, and those studies have tended to focus on how classroom wall decorations affect students' learning. This study, on the other hand, is designed to investigate the effects of DepEd order no. 21, s. 2023, "Baklas Operation," or the bare-wall classroom, on students' learning acquisition.

Hence, this study explored how teachers perceived the teaching-learning process in the classroom without any design or decorations. In connection with this, the researchers determined the perceptions of the elementary teachers in MSU-Marawi City on the DepEd Order No. 21, s. 2023 and how it affected students' learning. This study aims to identify elementary teachers' perceptions of the effects of the classroom without posted devices on the student's learning acquisition in the selected schools of Marawi City.

2. Literature Review

2.1 Cognitive Load Theory of John Sweller

A theory introduced by Sweller (1988) is a study of the amount of information a human can process at any given moment. Accordingly, humans can hold only a small amount of information in short-term memory at any given time. It emphasizes that new information cannot be learned when human capacity exceeds the limit (Zakrajsek, 2019). This theory includes three types of loads: intrinsic, extraneous, and germane (Zielonka, 2023). However, in this study, the researchers focused on the extraneous load, which focuses on the material and environment to which the children are subject. According to Loveless (2023), materials that are too attractive to the students can lead to distractions for the students. Thus, irrelevant images, distracting sounds, and unorganized decorations add to the extraneous load.

This theory is relevant to the present study as it shows how the environment affects students' capacity for acquiring information. Most young learners are visual learners; however, according to Sweller's theory (1998), too much exposure to learning materials can distract students.

2.2 Classroom Decluttering

The goal of decluttering is to make an area free of mess or clutter. According to the DepEd order, classroom walls must be kept plain and free of any decorations or posted items, such as tarpaulin or posters. Decluttering, as defined by Nollymer (2018), is the act of arranging a classroom in a way that makes it appear less cluttered to students. It means putting away any unnecessary objects and piles of unused paperwork. It is intended to improve the appearance of organization in your classroom and reduce distractions for your students while they try to concentrate in class.

Rankin (2023) states that learning settings should facilitate high-stakes tasks in which every second matters. People surrounded by clutter find it harder to concentrate, are less productive, and become more agitated. Students who are easily distracted may find it very bothersome. There is evidence that clearing clutter increases the amount of time spent on tasks and raises test scores.

2.3 Visual Noise in Learning Environment

Several studies have shown that "visual noise" can relate to the overall amount of physical clutter in the learning environment as well as the number of classrooms displays. To reduce visual noise, we must evaluate each decoration and remove anything that does not directly affect teaching and learning (Chandler, 2022).

According to Goldblum (2019), a classroom's layout impacts how well pupils learn. Numbers, alphabets, and other educational resources that are useful for teaching and learning are among the wall decorations, along with inspirational quotations for the kids. Students will perform better in a classroom with wall paint, decorations, and posters of their own work, and they will also try their hardest to post their own work there. However, a classroom without displays can be dull, and pupils will not be engaged. Furthermore, students can quickly get back on track if something piques their interest. Kids can learn when they feel at ease in the classroom, according to a Carnegie Mellon University study that found that "decorations in the classroom can affect the ability of the students to focus and study for children."

3. Methodology

3.1 Research Design

This study determined the perceptions of the elementary teachers in MSU-Marawi City on DepEd order No. 21, s. 2023 or also known as Baklas Operation. A quantitative method was utilized, particularly descriptive research design, to determine how the bare-wall classroom affected the teaching of the teachers. This approach was used

to characterize a situation in order to determine how independent and dependent variables are related to one another. In this study, the independent variables are name, sex, age, civil status, years in service, and grade level assigned, while the dependent variables are the selected teachers' perception of awareness of Baklas operation, Challenges in the implementation of Baklas operation of Baklas operation in Teaching and learning, and impact on teaching and learning process. After that, the data gathered was analyzed using statistical tools for interpretation, and lastly, the researchers made a policy brief based on the findings of the present study.

3.2 Respondents of the Study

By selecting the schools for the data gathering, the researchers used purposive sampling based on adhering to the Baklas Operation. Meanwhile, using a convenience sampling method, the respondents were one hundred (100) elementary teachers who were employed in Marawi City in school year 2024-2025, providing information about their compliance with DepEd order no. 21 s. 2023. This sampling technique refers to a group of non-probability sampling techniques in which the respondents are selected if they have implemented the DepEd order no. 21, s. 2023 or Baklas Operation. Additionally, out of 65 teachers in school A, the researchers only retrieved 32 questionnaires from them due to schedule conflict. Meanwhile, in school B, all 16 respondents from them have participated answering the survey, seventeen 17 teachers from school C, and in school D there have only 23 teachers participated out of 35 since some of them declined. Also, school E has nine teachers, and three teachers from school F who were able to respond to the research questions.

3.3 Statistical Tools Used

To review and interpret the data that the researchers have gathered, the researchers used certain statistical techniques.

3.3.1 Frequency and percentage distribution- Percentage distribution is one in which the frequencies of each respondent are represented as a percentage of the total frequency, which is equal to 100. This was used in determining the profile of the respondents.

3.3.2 Weighted Mean – It is a calculation used to find the average of the data. In this study, this was used to determine the effect of Baklas Operation on the learning acquisition of elementary pupils.

4. Results

Table 1: Frequency and Percentage of Respondents' Sex

Sex	Frequency	Percentage
Female	90	90%
Male	10	10%
Total	**100**	**100%**

Table 1 shows the frequency and distribution of the respondents based on their sex. As can be seen, the majority of the teachers in MSU-Marawi City are female, which comprised 90% of the total. Conversely, male respondents were the minority, with only 10%. Based on these results, one can tell that there are more female teachers in MSU-Marawi City than male teachers.

The data above support the claim of the study carried out by Sari (2012) regarding female teachers; approximately 30% of participants emphasized that being a woman adversely affected their professional life, and this negative effect largely stemmed from the multidimensional tasks and responsibilities they undertook from family and professional life. Additionally, Silt, Koomen, and Jak (2012) have determined that female teachers can build better relationships with students.

Table 2: Frequency and Percentage Distribution of Respondents' Age

Age	Frequency	Percentage
20-23	2	2%
24-25	19	19%
26-29	33	33%
30 and above	46	46%
Total	**100**	**100%**

Table 2 displays the age profile of the respondents. The findings indicate that many of the respondents are 30 and above years old (46 or 46.00%). Followed by those who are 26 to 29 years old (33 or 33.00%), some respondents are 24 to 25 years old with 19%, and only 2 respondents are 20 to 23 years old. These results can be ascribed to the study of Smith (1990), as cited by Ismail (2018), who revealed that middle-aged teachers were perceived by learners to be more effective in classroom organization, motivation, communication, and competence.

Table 3: Frequency and Percentage Distribution of Respondents' Civil Status

Civil status	Frequency	Percentage
Single	28	28%
Married	46	46%
Widow	18	18%
Separated	8	8%
Total	**100**	**100%**

Table 3 shows the frequency and percentage distribution of the civil status of the respondents. As shown in the data above, 46% of the respondents are married, 28% are single, 18 of the respondents are widowed, and only 8% are separated. In the study, Kong (2009) posited that single teachers with no family issues are more dedicated and committed to their jobs. According to Ayeop (2003), married teachers have higher job satisfaction compared to single teachers and those in a group of others (that is, separated and divorced).

Table 4: Frequency and Percentage Distribution of Respondents' Length of Service

Length of Service	Frequency	Percentage
1-5 years	**33**	**33%**
6-10 years	**33**	**33%**
More than 10 years	**34**	**34%**
Total	**100**	**100%**

As shown in Table 4, the teachers have been in service for 1 to 5 years (33%). Similarly, those teachers who have been in service for 6 to 10 years (33%) and more than 10 years (34%), respectively. Clearly enough, the total of 100 respondents have been in service for more than a year, and the majority have been in service for more than 10 years.

Additional analysis of the data revealed that "years of experience" play a significant role in teachers' beliefs in choosing their classroom management style. While teachers with less experience were found to be interactionists on each scale, experienced teachers scored consistently as interventionists. In other words, beginning teachers showed that they favor shared responsibility for classroom control, shared work on developing classroom rules, focused on not only behaviors but also feelings, and paid attention to what the individual does to alter the external milieu, as well as what the environment does to shape the individual (Cakiroglu & Gencer, 2007; Martin &

Baldwin, 1992) as cited by Unal. (2012). On the other hand, experienced teachers choose to believe in maximum teacher responsibility and focus more on the behavior to quickly redirect it to positive, choosing traditional behavior management (Swanson, O'Connor, & Cooney, 1990).

Table 5: Frequency and Percentage Distribution of Respondents' Grade Level Assignment

Grade Level Assignment	Frequency	Percentage
Grade 1	18	18%
Grade 2	21	21%
Grade 3	20	20%
Grade 4	12	12%
Grade 5	11	11%
Grade 6	18	18%
Total	**100**	**100%**

Table 5 shows the frequency and distribution of the teachers' assigned grade levels. As shown in the data above, 21% of the respondents were assigned to Grade 2, followed by Grade 3 (20%), 18% of them were assigned to Grade 1, same with 18% who were assigned to Grade 6, 12 of them were assigned to Grade 4, and 11% on the Grade, respectively. Hence, the majority of the respondents were assigned to Grade 2.

Table 6: ***Perceived Significance of Baklas Operation from the Lens of Elementary Teachers***

Statement	(5)	(4)	(3)	(4)	(1)	Mean	SD	Interpretation	Rank
[7]The Baklas operation allows clean and organized classroom environment.	72	26	2	0	0	**4.70**	**0.50**	**Strongly Agree**	**1**
[1]Baklas operation entails relevance and significance.	72	25	3	0	0	**4.69**	**0.52**	**Strongly Agree**	**2**
[9]The Baklas operation helps learners focus on their academic performance.	66	31	2	1	0	**4.62**	**0.57**	**Strongly Agree**	**3**
[3]I understand the effects and implications of Baklas operation on the Surrounding area.	62	35	3	0	0	**4.59**	**0.54**	**Strongly Agree**	**4**
[8]The implementation of the Baklas operation prevents any distractions in the classroom.	67	28	2	2	1	**4.58**	**0.72**	**Strongly Agree**	**5**
[2]I understand the objectives and goals of the Baklas Operation.	63	30	6	1	0	**4.55**	**0.65**	**Strongly Agree**	**6**
[10]The Baklas operation may sometimes hinder students' learning processes.	55	32	8	2	3	**4.34**	**0.93**	**Strongly Agree**	**7**
[6]I effectively removed unnecessary classroom decorations.	56	33	8	3	0	**4.42**	**0.76**	**Strongly Agree**	**8**
[5]I actively seek out information about the Baklas operation to stay informed.	44	40	7	9	0	**4.19**	**0.91**	**Agree**	**9**
[4]I've had enough training or information about the Baklas operates for my work as a teacher.	33	33	9	23	2	**3.72**	**1.20**	**Agree**	**10**
AVERAGE						**4.44**	**0.73**		

Legend:1.00-1.80 Strongly disagree 1.81-2.61 disagree 2.62-3.42 Neutral 3.43-4.23 Agree 4.24-5.00 Strongly agree

Table 6 suggests that the majority of the respondents are aware of the implementation of the Baklas Operation. Across various statements presented, the majority of the respondents strongly agreed that Baklas operation allows

a clean and organized classroom environment, and respondents tended to agree that they are aware of Baklas Operation such as they know what the Baklas Operation entails, understand its objectives and goals, as well as its effects and implications. Additionally, the respondents indicated that they effectively removed unnecessary classroom decoration, and it also prevented any distractions in the classroom. And lastly, the respondents strongly agreed that Baklas Operation might sometimes hinder the students' learning process. Overall, with an average mean of 4.44 and a standard deviation of 0.734, the findings suggest that respondents strongly agree that Baklas Operation is of significant in elementary classrooms.

The findings suggest that the elementary teachers are aware of the Baklas Operation and understand its objectives, goals, implications, and effects on the students. This result is supported by the study of Cabanella et al. (2024), which shows that the awareness of the Baklas Operation offers numerous significant insights, as shown in the survey findings with the elementary teachers.

Table 7: Perceived Effectiveness of Baklas Operations from the Lens of Elementary Teachers

Statement	(5)	(4)	(3)	(2)	(1)	Mean	SD	Interpretation	Rank
[10]Baklas operation, it allows me to buy other necessary materials to be used to deliver in my instructions.	55	37	6	2	0	**4.45**	**0.69**	**Strongly Agree**	**1**
[9]Baklas operation enables me to make inform decisions when it comes to student's placement, tracking progress, and identifying areas for improvement.	52	39	9	0	0	**4.43**	**0.65**	**Strongly Agree**	**2**
[8]My students are more likely to focus on the class discussion because they cannot divert their attention from the physical features of the classroom.	53	35	11	1	0	**4.40**	**0.72**	**Strongly Agree**	**3**
[5]The classroom became more pleasant in the eyes because of the Baklas Operation.	56	28	5	11	0	**4.29**	**0.98**	**Strongly Agree**	**4**
[4]I can easily determine the interest of the students because I can focus on the students rather than focusing on decorating the classroom.	43	41	4	12	0	**4.15**	**0.96**	**Agree**	**7**
[6]My students do not get distracted anymore because there is no classroom decoration that can lead to split attention.	51	28	8	11	2	**4.15**	**1.09**	**Agree**	**6**
[7]My students are always participating because they are not distracted with the classroom decorations.	43	38	9	8	2	**4.12**	**1.00**	**Agree**	**5**
[3]I can get the attention of the students because there is no distraction in the classroom wall.	42	37	9	12	0	**4.09**	**0.99**	**Agree**	**8**
[2]It is effective to teach because the classroom is free from any posters.	43	38	3	16	0	**4.08**	**1.04**	**Agree**	**9**
[1]The policy on Baklas Operation allows the teacher to effectively teach learners.	37	45	4	14	0	**4.05**	**0.98**	**Agree**	**10**
AVERAGE						**4.22**	**0.91**	**Agree**	

Legend:1.00-1.80 Strongly disagree 1.81-2.61 disagree 2.62-3.42 Neutral 3.43-4.23 Agree 4.24-5.00 Strongly agree

Table 7 displays the respondent's perceptions of the implemented DepEd order no.21, s.2023. The greater part of those respondents strongly agreed that the implementation of Baklas allows them to buy other important materials to be used during their discussion, it also enables them to make informed decisions when it comes to student's placement and tracking their improvements. With the implementation of the Baklas operation, the respondents strongly agreed that their students were more likely to focus on the class discussion because of the absence of classroom decorations and that the classroom became more pleasant in the eyes of learners.

Meanwhile, some respondents have agreed that with the implementation of Baklas Operation, they can easily determine the interest of the students and that they do not get distracted anymore because there is no classroom decoration that could distract the students. Lastly, they agreed that Baklas Operation allows the teacher to effectively teach the learners. Overall, with an average mean of 4.22 and a standard deviation of 0.913, the findings suggest that respondents strongly agreed that the implementation of the Baklas Operation allows them to teach effectively, and the students were more likely to focus during the class sessions.

The findings imply that elementary teachers can effectively teach in a classroom wherein there are no decorations, the students can focus on the lessons, and they cannot be distracted. This result is supported by the study of Beyer (2021), who found that teachers' opinions on the physical environment of their classrooms will influence the judgments they make about it. Beyer (2021) cites Gauvain & Cole (2005) as saying that Bronfenbrenner's Theory of Ecological Systems Approach teaches us that an individual's development can be significantly influenced by the way they interact with their immediate environment over time. We are aware that student behavior and learning can be influenced by the physical classroom setting because of the evidence these studies provide. It is crucial to alter the classroom atmosphere in a way that will reduce disruptive responses and behavior while boosting academic engagement.

Table 8: Perceived Challenges of Baklas Operation on Teaching and Learning

Statement	(5)	(4)	(3)	(2)	(1)	Mean	SD	Rank	Interpretation
[2]It was hassle for me when I demolished the posted classroom devices.	46	30	8	12	4	**4.02**	**1.17**	**1**	**Agree**
[10]I find it challenging to adjust during the implementation of Baklas Operation because I used to teach in a classroom wherein there are lots of posted devices which affect the learning of my students.	49	24	6	19	2	**3.99**	**1.22**	**2**	**Agree**
[9]I struggle to execute my instructions because of the bare-wall classroom and there is nothing to make as part of the teaching process which causes my students to have a limited knowledge about our topic.	48	24	4	19	5	**3.91**	**1.31**	**3**	**Agree**
[4]Whenever I teach, I have difficulty in showing examples because I am relying on the posted classroom devices.	41	32	3	18	6	**3.84**	**1.29**	**4**	**Agree**
[3]Whenever I teach, I have difficulty in supporting my discussion because I cannot see any posted sample.	43	28	5	17	7	**3.83**	**1.32**	**5**	**Agree**
[1]Whenever I teach, I have difficulty in teaching without any classroom decorations.	46	22	7	15	10	**3.79**	**1.40**	**6**	**Agree**
[6]The Oplan-Baklas operation lessens my students' creativity.	41	22	3	21	13	**3.57**	**1.50**	**7**	**Agree**
[7]I find it difficult to encourage my students in participating because they want to learn in a classroom with decorations on.	37	25	7	19	12	**3.56**	**1.44**	**8**	**Agree**
[8]I have difficulty in getting the attention of my students because they are bored without any classroom decorations.	36	25	7	23	9	**3.56**	**1.40**	**9**	**Agree**
[5]Whenever I teach, I am not motivated because I must print every material I need in teaching.	29	32	4	19	16	**3.39**	**1.46**	**10**	**Neutral**
AVERAGE						**3.75**	**1.35**		**Agree**

Legend:1.00-1.80 Strongly disagree 1.81-2.61 disagree 2.62-3.42 Neutral 3.43-4.23 Agree 4.24-5.00 Strongly agree

Table 8 presents the rate of the respondents on the challenges of Baklas operation on Teaching and Learning. Across various statements presented, respondents tended to agree that they have difficulty teaching without any classroom decorations, and it is a hassle for them when they also demolish the posted classroom. They have difficulty in executing their discussion because they cannot give enough. However, despite having no classroom decorations and educational devices, the study shows that the respondents tended to answer neutrally and not motivated in teaching because they had printed all the needed materials in the discussion. Moreover, with an average mean of 3.75 and a standard deviation of 1.356, the findings suggest that respondents agreed that they were challenged in teaching and learning during the implementation of Baklas Operation.

The findings imply that elementary teachers are challenged to teach in a classroom without any classroom posters. This result is supported by the study of Nadia and Kusumawati (2019), which employed field research with a quantitative methodology. According to the findings, comprehensive facilities are essential for effective teaching and learning because, on the other hand, students would participate in class activities more when the teacher has adequate resources. Thus, how well the learning process is supported will decide how well the learning is learned.

Table 9: Perceived Impact of Baklas Operation on Teaching and Learning from the Lens of Elementary Teachers

	(5)	(4)	(3)	(2)	(1)	Mean	SD	Interpretation	Rank
[9]Baklas operation allows the teachers and students to easily move throughout the room.	56	36	1	7	0	**4.41**	**0.82**	**Strongly Agree**	**1**
[6]The DepEd order no. 21, s. 2023 provides a learning environment that increases student engagement and learning.	48	37	5	9	1	**4.22**	**0.96**	**Strongly Agree**	**2**
[5]Classroom without decorations improves my students' learning because they are not distracted.	49	33	7	11	0	**4.20**	**0.98**	**Strongly Agree**	**3**
[8]Classroom without decoration encourages the students to develop social skills because they are more likely to interact with their classmates.	48	33	7	11	1	**4.16**	**1.02**	**Agree**	**4**
[3]My students can focus during the discussion because the classroom walls are bare.	45	37	5	12	1	**4.13**	**1.02**	**Agree**	**5**
[7]Baklas Operation allows the teaching-learning inside the class to be more interactive.	38	36	12	13	1	**3.97**	**1.05**	**Agree**	**6**
[10]Bare-wall classroom has a negative effect on the academic performance of the students because they can only see educational instructions when the teacher initiate.	42	35	4	11	8	**3.92**	**1.27**	**Agree**	**7**
[1]My students are more participative without any decorations in the classroom	39	33	7	17	4	**3.86**	**1.21**	**Agree**	**8**
[2]My students are not motivated in learning because of not having classroom decorations.	24	31	7	30	8	**3.33**	**1.33**	**Neutral**	**9**
[4]My students are bored during class sessions because of the bare-wall classroom.	33	20	9	22	16	**3.32**	**1.50**	**Neutral**	**10**
AVERAGE						**3.95**	**1.12**	**Agree**	

Legend:1.00-1.80 Strongly disagree 1.81-2.61 disagree 2.62-3.42 Neutral 3.43-4.23 Agree 4.24-5.00 Strongly agree

Table 9 presents the rate of the respondents on the challenges of Baklas operation on Teaching and Learning. Across various statements presented, respondents strongly agreed that the implementation of Baklas allows the teachers and students to move easily throughout the room and gives learners an opportunity to engage and learn. In addition, respondents tended to agree that students are more participative without any decorations the respondents tend to answer neutral is not motivated in learning because of not having classroom decoration as well as bored during class sessions because of the bare-wall classroom, Overall, with the average mean 3.95, and

standard deviation of 1.121, the findings suggest that respondents agreed that Baklas operation has a positive impact on the teaching and learning.

The findings imply that the Baklas Operation has a positive impact on teaching and learning. This result is supported by the study of Nicola McDowell and Julia Budd (2018), who found that de-cluttering improved students' learning experiences, behavior, and overall functioning by minimizing the quantity of visual information they had to process. This allowed students to make better use of their intact visual abilities and experience less distraction. By conducting a semi-structured interview with a team from two classes, the researchers used a qualitative research method to discuss how the classroom's physical decoration influences the kids' behavior. Additionally, Fisher et al. (2014) support this finding. Kindergarten students in the study were randomized to receive introductory science instruction in a classroom with several wall displays or one without any at all. More distractions and lower performance on lesson worksheets were reported by students in the classroom with wall displays compared to those in the empty classroom. Research indicates that students in decorated classrooms are more likely to become distracted by their surroundings.

Proposed Policy Brief on the Implementation of Baklas Operation from the Lens of the Elementary Teachers in Marawi City

Overview

This document is proposed to outline consideration in the development of policy of the DepEd Order no. 21, s. 2023, also known as Baklas Operation, mandated by the Department of Education (DepEd), ordered the removal of classroom decorations to create an environment free from unnecessary displays, posters, and decorations. This study investigates the implications of this policy from the perspective of elementary teachers in Marawi City, focusing on its impact on teaching and learning. The following are the key results of the present study:

1. Positive Impact on Focus: Most teachers agreed that classrooms without posters or unnecessary displays can reduce distractions, allowing students to concentrate better during lessons.

2. Visual Learning Needs: Teachers expressed concerns that primary students (Grades 1-3) may struggle in a decluttered environment, as they often benefit from visual stimuli to enhance engagement and learning.

3. Various Reactions: While many teachers acknowledged the effectiveness of the Baklas Operation, some viewed it as a hindrance to effective teaching due to the lack of visual aids and classroom displays. With that, they tend to bring materials that will be needed in their classroom discussion because there is nothing to give as an example that could possibly be seen in the classroom environment.

Purpose

This policy aims or purposes to:

1. Convey with the Department of Education and the MBHTE-BARMM that DepEd no. 21, s. 2023 should consider the primary levels in addition to this mandate.

2. Consult the DepEd order no. 21 s, 2023 with the Education stakeholders for any modification on the implementation and guidelines of the said DepEd Order.

3. Serve as a baseline for Enhancing the DepEd Order no. 21, s. 2023.

In general, this policy aims to clarify that there is a posing challenge among teachers in elementary grades with decluttered classroom decorations.

General Problem

According to the present study, there is a challenge for the teachers in executing their lessons in a classroom that is free from unnecessary posters, and some teachers expressed concerns that primary students (Grades 1-3) struggled in a bare-wall classroom.

Recommendations

Based on this policy brief, the following is recommended:

1. Feedback mechanism: The Department of Education (DepEd) should establish a feedback system to gather insights from teachers regarding the Baklas Operation. This will help in understanding the practical implications of the policy and making necessary adjustments.

2. Policy Development for Primary Grades: The Bangsamoro Autonomous Region in Muslim Mindanao (MBHTE – BARMM) should consider developing a tailored policy for Primary level that accommodates the visual learning needs of younger students while balancing the benefits of a decluttered environment.

3. Professional Development for Teachers: Training programs should be implemented for teachers to equip them with strategies to effectively teach in bare-wall classrooms, focusing on alternative methods to engage students without the support of classroom displays.

4. Collaboration with Curriculum Planners: engage curriculum planners to identify and integrate curricular items that support learning in a decluttered environment, ensuring that educational materials are still accessible and effective.

Relevance to DepEd and MBHTE-BARMM

This section provides relevance to DepEd and MBHTE-BARMM because this policy can be a guide to enhance the DepEd order and to suggest the MBHTE- BARMM to create a policy regarding the classroom decoration that should focus on the Intermediate Grades (Grade 4-6). With that, the primary grades (Grade 1-3) should be an exception in the mandatory decluttered classroom. By addressing the concerns raised by teachers and adapting policies to meet the needs of all students, the DepEd and MBHTE can enhance the learning environment for elementary learners.

5. Findings

From the data gathered, the following are the summary of findings:

1. Among the complete set of respondents, 90 individuals (constituting 90%) were female, whereas only 10 individuals (making 10%) were male.
2. The majority of the respondents are above 30 years old (46%), some teachers are 24-25 (33%), 26-29 (33%), and only 2% are 20 to 23 years old.
3. Most of the respondents are married (46%), 28% are single, 18% are widows, and 8% are separated.
4. Moreover, regarding their grade level assigned, it revealed that 18% were assigned to grade 1, 21% were assigned to grade 2, 20% were assigned to grade 3, 12% were assigned to grade 4, 11% were assigned to grades 5, and 18 also were assigned to grade 6.
5. Most of the respondents have been in service for more than 10 years (34%), some of them have been teaching for 6-10 years (33%), and 33 of them have been in service for 1-5 years (33%).
6. Further, most of the respondents strongly agreed that they are aware of the implementation of the Baklas Operation.
7. Most of the respondents perceived that they could effectively teach in a classroom without unnecessary posters.
8. Most of the respondents agreed that the implementation of the Baklas operation is challenging.
9. It revealed that based on the results of the data gathered, majority of the respondents agreed that there is a positive impact of Baklas Operation on teaching and learning.

6. Conclusion

Based on the findings of the present study, it can be concluded that Baklas Operation has proven to have a positive impact on teaching and learning. Teachers strongly agree that a bare-wall classroom enhances focus and minimizes distractions, allowing students to better engage in class discussions. This environment fosters improved concentration and supports a more effective learning experience. Although some teachers are not in favor of Baklas Operation as they claimed “it is a hindrance to effective teaching and learning” because of limited classroom displays, it is suggested that the primary level such as Grades 1 to 3 may not implemented Baklas Operation due to the fact that these learners are visual learners, and that a decorated classroom helps learning more interesting and meaningful.

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Preservation of Cultural Identity in Digital Ecosystems

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Abstract
The rapid progression of globalization and digitalization presents both significant opportunities and various challenges for the preservation and sustainability of cultural identities. While digital ecosystems offer innovative tools and methods for maintaining, disseminating, and revitalizing cultural identity in the digital environment, they also carry risks such as cultural homogenization and the digital divide. This article examines the preservation of cultural identity within the context of digital ecosystems and provides a comprehensive analysis of the impact of digital tools on cultural identity in light of the existing literature. It discusses how digitalization supports and preserves cultural diversity. Additionally, it offers strategic recommendations for preventing digital homogenization and closing the digital divide. In conclusion, it emphasizes the contributions of the conscious and strategic use of digital ecosystems to the strengthening and sustainability of cultural identities.

Keywords: Digital Ecosystem, Cultural Identity, Cultural Heritage, Digital Preservation

1. Introduction

Globalization and digitalization have led to profound changes in the economic, social, and cultural dynamics of societies in recent years, presenting both significant opportunities and various challenges for the preservation and sustainability of cultural identities (Appadurai, 1996; Castells, 2010). The rapid development and widespread use of digital technologies offer innovative tools and methods for preserving, disseminating, and revitalizing cultural heritage in digital environments, while also introducing critical risks such as cultural homogenization, the digital divide, and data security (Sussan & Acs, 2017; Noble, 2018).

Digital ecosystems are defined as continuously evolving, self-organizing structures in which software applications, digital platforms, data flows, users, and other digital entities interact (Briscoe, 2009). These structures play an important role in the digitization and broad dissemination of cultural content. For example, digital archiving techniques protect cultural objects against physical deterioration by storing them in digital formats, while virtual reality (VR) and augmented reality (AR) applications enable the re-creation of cultural sites and events within digital environments (Manovich, 2013; Champion, 2016). In addition, artificial intelligence–supported analyses and blockchain technologies facilitate the examination, verification, and secure sharing of cultural content (Rosenblatt & Dykstra, 2003; Lessig, 2004).

However, the process of digital transformation also brings the risk of cultural homogenization. Under the influence of global digital platforms, local and unique cultures may become increasingly similar, leading to a reduction in cultural diversity and the erosion of local identities (Appadurai, 1996; Castells, 2010). This situation makes it more difficult for societies to preserve their distinctive cultural practices and identities, thereby threatening the richness of cultural diversity. Moreover, the inequalities in access to technological infrastructure, known as the digital divide, raise the issue that some communities may not be adequately represented in digital spaces (Noble, 2018). These inequalities disadvantage communities that lack or have limited access to digital technologies, making it more challenging for them to protect and disseminate their cultural heritage in digital environments.

The aim of this study is to objectively and comprehensively evaluate the impact of digital ecosystems on cultural identities, to reveal the potential of digital technologies in preserving cultural heritage, and to contribute to the existing literature in this field. Furthermore, by providing strategic recommendations for future research, it seeks to help develop policies and practices that balance the positive and negative effects of the digitalization process on the sustainability of cultural identities. In conclusion, it is foreseen that through the conscious and strategic use of digital ecosystems, cultural identities can be strengthened, and cultural diversity can be preserved and sustained. A review of the literature shows that Briscoe and De Wilde (2006) examined the influence and evolution of digital ecosystems on service-oriented architectures. Nachira, Dini, and Nicolai (2007) presented a comprehensive analysis of the development and future of digital business ecosystems in Europe. Iansiti and Levien (2004) focused on strategic management and leadership within digital ecosystems. Ghazawneh and Henfridsson (2013) analyzed the balance between third-party contributions and platform control in digital platform ecosystems. Parker, Van Alstyne, and Choudary (2016) discussed how digital platforms are transforming the economy and how to benefit from this transformation. Adner (2006) worked on aligning innovation strategies with digital ecosystems, and Basole (2009) made significant contributions by visualizing and analyzing interfirm relationships in mobile digital ecosystems. Although these studies address different dimensions of digital ecosystems, no research has been encountered concerning the preservation of cultural identity in digital ecosystems. Therefore, this study is expected to contribute to the literature.

Another important focus of the article is to address in detail the risks and challenges posed by digital ecosystems. To prevent cultural homogenization, it is recommended to support local cultural content on digital platforms. To bridge the digital divide, strategies such as protecting cultural content through copyright, developing digital ethics, and implementing digital literacy education programs are suggested. Additionally, measures to ensure data security and privacy may be essential for protecting cultural data in digital environments.

2. Method

This study, prepared within the context of qualitative research methodology, was designed using the literature review model. A literature review is a model that systematically examines the existing body of knowledge on a specific topic or research question. This model enables the researcher to conduct an in-depth analysis of existing studies in the field, gain insights into current theories and findings, and identify gaps or deficiencies in the research area. Literature reviews form the theoretical foundation of the research and provide a framework for new studies (Webster & Watson, 2002). In this model, the researcher first selects literature relevant to the study's purpose and analyzes it systematically. The scope of the literature review can be broad or narrow, depending on the aim and scope of the study. The findings of the literature review not only present the researcher with the current body of knowledge on the subject, but also make recommendations for future research and offer critiques of existing studies (Okoli & Schabram, 2010).

In this study, a comprehensive literature review was conducted with the aim of preserving cultural identity within the context of digital ecosystems. As part of the literature review, a robust conceptual framework was developed to examine and analyze the topic in detail. This framework is designed to systematically evaluate fundamental elements such as the concept of the digital ecosystem, how cultural identities can be sustained in digital environments, the role of digital tools in this process, and the challenges encountered. Created through the synthesis of existing theoretical approaches, the conceptual framework offers a multidisciplinary perspective for understanding the effects of digital technologies on cultural identity. In this way, the positive and negative impacts

of digitalization on cultural identities are thoroughly analyzed, and strategic recommendations guiding future research can be developed.

3. Results

3.1. The State of the Development Process of Digital Ecosystems

The term "digital ecosystem" is used in various senses in academic literature and practical applications (Fiorina, 2000). Digital ecosystems are generally defined as structures based on existing internet infrastructures, providing a framework that encompasses the manner in which companies present their e-business solutions to customers. These structures include future-oriented developments intended to support business ecosystems, alongside the integration of Information and Communication Technologies (ICT) into e-business processes. Particularly with the adoption of ICT, digital ecosystems have taken on a critical role in the digitalization and optimization of business processes. In addition, digital ecosystems hold a significant place within the scope of "Artificial Life" research. In this context, digital ecosystems are employed to model certain aspects of biological and other complex systems. However, the similarities between digital ecosystems and biological ecosystems can be limited. Thus, careful use of language and concepts is required when defining and employing the concept of digital ecosystems (Ray, 1993; Moore, 1996; Denning & Metcalfe, 1997; Grand & Cliff, 1998; Cliff & Grand, 1999).

The concept of the "digital ecosystem" emerged by adapting the concept of the "ecosystem," initially defined in the 1930s by British botanists Arthur Roy Clapham and Arthur George Tansley, from the natural world to the digital world. While Tansley's definition of an ecosystem emphasizes the complex relationships among biodiversity and environmental factors, digital ecosystems reinterpret these interactions among digital components. Digital ecosystems are defined as continuously evolving, self-organizing structures in which software applications, digital platforms, data flows, users, and other digital entities interact (Tansley, 1935; Sussan & Acs, 2017).

According to Sussan and Acs (2017), the ecosystem concept originally emerged in the biological sciences to examine the complex interactions between living organisms and their environments. Over time, the flexibility and comprehensiveness of this concept allowed it to be adapted to various disciplines. By embracing an ecosystem approach in fields such as education, entrepreneurship, health, finance, and e-commerce, the dynamics of these sectors began to be understood more effectively. Examples include:

In education, the concept of learning ecosystems encompasses the interactions among students, teachers, families, technological tools, and educational materials. This approach aims to enrich individual learning experiences and make education more personalized. Integrating digital technologies makes learning processes more accessible and flexible, enabling students to progress at their own pace and in line with their interests.

In the field of entrepreneurship, the ecosystem approach examines the relationships among entrepreneurs, investors, mentors, educational institutions, and government policies. These ecosystems create an environment that fosters innovation and supports the growth of new ventures. Access to resources, knowledge sharing, and collaborative opportunities increase the likelihood of entrepreneurial success.

In the health sector, digital health ecosystems create a network among patients, healthcare providers, insurance companies, and technological solutions. This ecosystem enables secure patient data sharing, telemedicine services, and personalized treatment plans. As a result, the quality and efficiency of healthcare improve, costs decrease, and patient satisfaction rises.

In the financial world, financial ecosystems encompass relationships among banks, fintech companies, regulatory institutions, and customers. This structure accelerates the digitalization of financial services, encouraging developments in innovative payment systems, digital currencies, and blockchain technologies. Financial inclusion increases, providing individuals and businesses with access to a wider range of services.

In the e-commerce sector, the ecosystem approach involves the interactions among sellers, buyers, logistics service providers, payment systems, and marketing platforms. This ecosystem facilitates global trade, offers consumers more choices, and enables businesses to access new markets. The integration of technologies such as data analytics and artificial intelligence enhances the customer experience and improves operational efficiency (Sussan & Acs, 2017).

According to Sussan and Acs (2017), the expansion of digital ecosystems constitutes a new paradigm in the digital economy and entrepreneurship. In their view, digital ecosystems form the foundation of innovative business models and value creation processes. With the rapid advancement of technology, these ecosystems blur the boundaries of traditional sectors and redefine competition on a global scale.

In recent years, as technology and the internet have developed rapidly, the concept of the "digital ecosystem" has become more pronounced. Digital ecosystems are not merely the result of bringing together digital components, but rather emerge from the interactions among these components. These interactions encompass dynamic processes such as data sharing, collaboration, and competition. Key characteristics of digital ecosystems include complexity, interdependence, scalability, and sustainability. They possess the ability to self-organize and maintain stability, continuing to operate reliably despite external interventions (Briscoe, 2009; Li, Badr & Biennier, 2012; Tiwana, 2013).

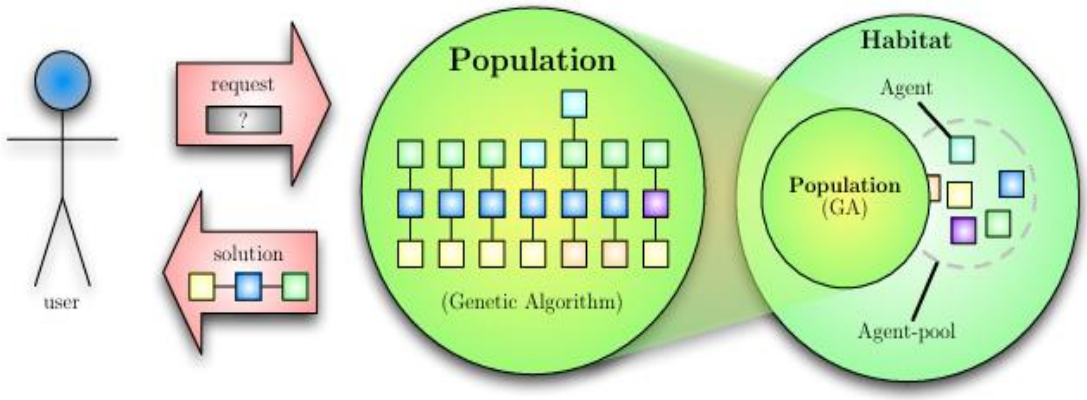

Figure 1: Operation of Digital Ecosystems (Briscoe, 2009).

This figure illustrates the workflow from a user to a solution within a digital ecosystem. The diagram consists of four main sections:

- User: The user sends a request to the system. This request is a semantic definition related to the service or application the user requires.
- Request and Solution: The user's request is represented by a symbol, and the corresponding solution is indicated as the output generated by the system. The solution is obtained using a genetic algorithm.
- Population: The population area represents the community of agents (software units) created in response to the user's request. This population utilizes genetic algorithms (GAs) to strive for an optimal solution. Each square within the population represents an agent, and different colors likely signify the various functions or states of the agents.
- Habitat: The habitat is the environment where the population is created and evolves. Here, there is an "Agent-pool," which is a repository of available agents. This pool contains all potential agents within the habitat, and specific agents are selected based on the needs of the population.

Overall, this visual depicts how user requests are processed within a digital ecosystem, how software agents dynamically evolve, and how a configuration is structured to produce solutions tailored to the user's needs. The operations at each stage and their integration clearly demonstrate the flow and functionality within the system (Briscoe, 2009).

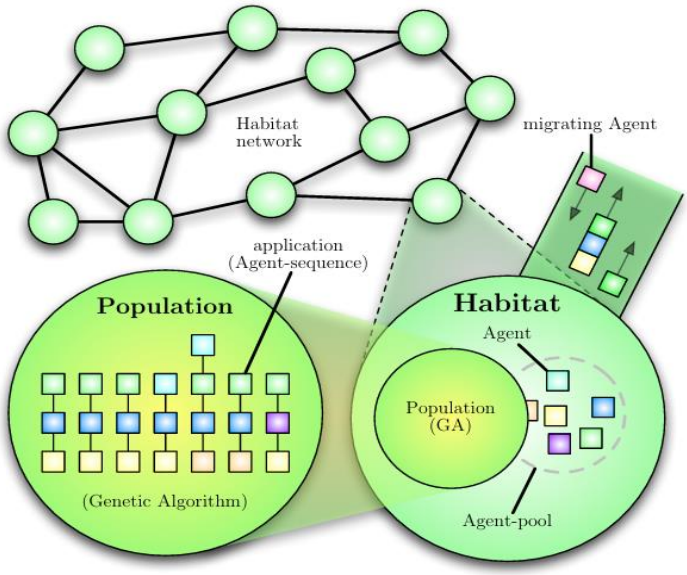

Figure 2: Network Structure Between Habitats in a Digital Ecosystem (Briscoe, 2009).

This figure illustrates the network structure between habitats within a Digital Ecosystem and how the interacting components operate. The main components in the visual and their functions can be explained as follows:

- Habitat Network: This network represents various interconnected habitats. Each circle symbolizes a habitat, and the connections between these habitats indicate the flow of components and information. The movement of components between these habitats facilitates the sharing of information and resources throughout the ecosystem.
- Migrating Agent: This represents a component migrating from one habitat to another. Migrating agents can collect information from different habitats and transport it to other habitats. This process increases diversity and promotes inter-habitat collaboration, thereby enhancing the ecosystem's overall adaptability and innovation capacity.
- Component-sequence: This is a sequence of components specifically arranged to perform a certain task. The component sequence is structured in response to a specific need within the habitat and utilizes genetic algorithms to address this need.
- Population: The population refers to a collection of components brought together to perform a specific task. This population is selected from the component pool within the habitat and optimized using a genetic algorithm. The colors of the population likely represent different functions or characteristics of the components.
- Habitat: Habitat refers to the specific environment where components reside and interact. The component pool contains all components available within this habitat that could potentially be part of a population. The habitat also provides a framework for the development and optimization of components.

Overall, this visual serves as an effective illustration of how components are organized within digital ecosystems, how they migrate between habitats, and how they interact within the overall system. It also highlights the dynamic nature of information flow and resource utilization within the system. In this context, a digital ecosystem is a system where various digital tools, applications, and services operate in an interconnected manner. This can be likened to a natural forest, where trees, animals, and plants coexist, support each other, and maintain the ecosystem's balance. Similarly, in a digital ecosystem, computer programs, websites, mobile applications, and devices (such as phones, tablets, and computers) collaborate. These connections facilitate information sharing, enhance operational speed and efficiency, and enable the emergence of new ideas. For example, a smartphone application can integrate with social media accounts, cloud storage services, and online shopping sites. Collectively, these integrations work together to provide users with an enhanced digital experience (Briscoe, 2009; Tiwana, 2013).

The infrastructure of digital ecosystems is often supported by advanced technologies such as cloud computing, big data analytics, and the Internet of Things (IoT). These technologies enhance data processing capacity, enable faster and more effective decision-making processes, and ensure that ecosystem components interact with one another more efficiently. For example, cloud computing infrastructure allows digital ecosystems to store and process large volumes of data, while artificial intelligence algorithms extract meaningful insights from these data, contributing to a smarter and more predictable ecosystem (Briscoe & Marinos, 2009; Giusto et al., 2010; Hashem et al., 2015; Hassan, 2018).

Platforms play a significant role in the creation of digital ecosystems. Platforms serve as fundamental structures that enable various components of a digital ecosystem to interact with each other. For instance, Apple's iOS platform or Google's Android platform act as bridges among application developers, users, and service providers, thereby supporting the integrity and functionality of the ecosystem. Such platforms promote the growth and diversification of digital ecosystems, allowing for the emergence of new business models and innovative solutions (Evans, 2016; Parker et al., 2016).

Users are among the most important actors in digital ecosystems. Beyond simply consuming digital services, users contribute to the ecosystem's development by providing feedback and engaging with it. User needs and expectations play a decisive role in the evolution of digital ecosystems. Therefore, user-centered design and user experience management are critical for the success of digital ecosystems (Schaffer, 2004; Norman, 2013).
In conclusion, digital ecosystems can be described as dynamic structures that emerge as the digital-world reflections of biological ecosystems and continually evolve alongside technological developments. These ecosystems arise from the interaction of complex, interdependent digital components, and they stand out as self-organizing, scalable, and sustainable. In this context, digital ecosystems are considered significant structures capable of adapting to today's rapid technological changes and offering innovative solutions across various sectors.

3.2. The State of the Construction and Representation of Cultural Identity in Digital Ecosystems

Cultural identity is a concept that reflects the values, norms, beliefs, and practices of the culture to which individuals belong (Du Gay & Hall, 1996). This identity takes shape through individuals' interactions with their social environments and exhibits a dynamic structure over time (Hall, 1990). Preserving cultural identity is of great importance for the sustainability of social diversity and cultural heritage (Anderson, 1983). When societies maintain their cultural identities, it not only strengthens the sense of belonging on both individual and collective levels, but also encourages the development of intercultural dialogue and understanding. Moreover, the preservation of cultural identity in the process of globalization functions as a balancing element against the risks of cultural homogenization and assimilation (Appadurai, 1996; Berry, 1997). The sustainability of cultural heritage is not solely about preserving the past; it is also critical for ensuring that the values and accumulated knowledge are passed on to future generations (UNESCO, 2003). In this context, the preservation of cultural identity is an indispensable factor for maintaining social cohesion and sustaining the richness of cultural diversity (Giddens, 1991).

The construction and representation of cultural identity in digital ecosystems has become an important field of research with the rapid advancement of technology in modern societies. This is because digital platforms offer extensive opportunities for individuals to express and redefine their cultural identities (Marwick & Boyd, 2011). Tools such as social media, blogs, online forums, and digital artworks enable users to share their cultural experiences and represent these experiences digitally (Ketelaar, 2008). In this process, digital environments allow cultural identity to emerge in a flexible and multilayered manner, permitting individuals to present various components of their identity simultaneously (Nakamura, 2007). However, there is also a risk of homogenization in digital representation; global digital platforms can lead to the widespread adoption of certain cultural norms and values, ultimately weakening local cultural diversity (Poster, 2006; Couldry, 2012; Manovich, 2013). Furthermore, the construction of cultural identity in digital spaces involves structural barriers, such as digital inequalities and access issues faced by users as they shape their identities through digital tools (Noble, 2018). In this regard, the construction and representation of cultural identity in digital ecosystems presents both opportunities and

challenges, playing a significant role in the sustainability and diversity of cultural identity (Jenkins, 2011; Papacharissi, 2010).

3.2.1. The State of the Digitization of Traditional Cultural Elements

The digitization of traditional cultural elements is important for preserving cultural heritage and transmitting it to future generations. Cultural heritage is one of the most valuable elements expressing the identities and histories of societies. Ensuring its preservation and sustainability is not only carried out through physical methods, but also through digital technologies. Digitization contributes to the long-term preservation of cultural elements, facilitates access to them, and promotes their recognition on a global scale. Digital archiving techniques make it possible to convert historical documents, manuscripts, artworks, and other cultural objects into digital formats, protecting them from physical deterioration. As these cultural objects are stored digitally, they remain preserved for the long term and are safeguarded from the risk of physical damage. UNESCO's World Digital Library project aims to increase the accessibility of materials from different cultures by digitizing them (Ketelaar, 2008; UNESCO, 2015a). Such projects enable digitized cultural elements to reach wider audiences worldwide and foster cultural awareness.

Another significant advantage of the digitization process is that it makes cultural objects more accessible for academic research. Digital archives allow researchers and students to easily access cultural materials, contributing to more comprehensive analyses in cultural studies (Parry, 2007). Digitization not only involves preserving cultural heritage, but also making it more effectively usable in the academic world. This process serves the purpose of presenting cultural heritage to broader audiences for research and educational use, facilitating the transmission of cultural knowledge.

Moreover, digitization makes it possible to present cultural heritage in interactive and user-friendly formats. Digital platforms go beyond the passive viewing of cultural heritage, enabling users to actively engage with it (Manovich, 2013). Users who interact with digitized cultural content can add their own comments, share their experiences, and thus contribute to the continuous reinterpretation of cultural heritage. This can help cultural heritage gain a dynamic structure and be embraced by societies.

The digitization process also increases the global sharing of cultural heritage and enhances interaction between different cultures. As cultural heritage reaches large audiences through digital platforms, it contributes to the preservation of cultural diversity and the development of global awareness and understanding. This allows cultural elements to become part of the common heritage of the global community, rather than remaining confined to the local level. Digitized cultural elements enable people in different geographical regions to recognize this heritage and respect cultural diversity. However, the digitization process also brings certain challenges. Ensuring the accuracy and authenticity of digital content, digital rights management, and inequalities in access are among the important issues that must be carefully addressed in this process (Appadurai, 1996; Warschauer, 2004; Parry, 2007).

3.2.2. The State of the Impact of Digitalization on Local Cultures

Digitalization emerges as a multidimensional phenomenon in terms of its effects on cultures. The rapid spread of digital technologies enables local cultures to reach wider audiences and actively participate in global cultural interactions. Social media platforms, digital archiving systems, and online media increase the visibility of local cultural elements and contribute to their recognition on a global stage. However, this increased visibility brought about by digitalization also entails that local cultures must adapt to global norms. This situation raises the risk that local cultures may lose their distinctiveness, leading to cultural homogenization (Appadurai, 1996; Tomlinson, 1999; Ketelaar, 2008).

For local artists and cultural actors, digital platforms offer the opportunity to showcase their work and gain international recognition. While this allows them to reach a global audience, it also creates the necessity to comply with global cultural norms and expectations. Popular culture spreading through social media, in particular, makes

it more challenging to protect local cultural practices and languages. The fact that digital content is often produced in more widely used and universal languages causes local languages and cultural expressions to become marginalized (Nakamura, 2008). This threatens the diversity of local cultures and sets the stage for cultural homogenization.

For example, promoting local folk dances and music on digital platforms allows these cultural elements to reach a global audience. However, the need to meet certain standards for these genres to achieve commercial success in digital environments can lead to the disappearance of traditional elements and the commercialization of local cultural values (Pieterse, 2004). Adapting cultural products to appeal to a broader audience may mean compromising their authenticity and rendering cultural heritage superficial. In this context, digitalization can usher in the universalization and commercialization of local cultural forms of expression.

This impact of digitalization on local cultures creates a series of challenges in terms of preserving cultural identity. While taking advantage of the benefits of the digitalization process, it is of great importance to take measures against the risk of cultural homogenization that arises during this process. Strategic approaches must be developed regarding how to use digital platforms in a way that preserves cultural diversity and maintains the authenticity of local cultural expressions. Although digitalization presents great opportunities for promoting and preserving local cultures, effectively utilizing these opportunities requires attention to the accuracy, authenticity, and ethical use of digital content. In this regard, global and local digital policies must be developed to ensure that local cultures are accurately represented in the digital environment and to reduce the risk of cultural homogenization. UNESCO's recommendations for preserving cultural diversity provide an important roadmap for supporting and protecting local cultural expressions on digital platforms (UNESCO, 2001; Jenkins, 2011).

For the sustainability of cultural diversity, ethical principles should be adopted in the process of promoting local cultures in digital media, and the necessity for these cultural elements to conform to global cultural norms should be minimized. Digitalization can be a powerful tool for local cultures to gain global visibility; however, this process must be carefully managed from the perspective of preventing the loss of local cultural authenticity and preserving cultural diversity.

3.3. The State of New Approaches to Preserving Cultural Heritage: Digital Storytelling and Virtual Reality

The rapid development of digital technologies has created new opportunities for the preservation of cultural heritage and its transmission to future generations. In particular, digital storytelling and virtual reality (VR) technologies offer innovative approaches for reaching broader audiences and enabling interactive experiences of cultural heritage. Digital storytelling combines text, visuals, sound, and interactive elements to help users form a profound connection with cultural narratives. By going beyond the boundaries of traditional storytelling, this method encourages active user participation and allows them to emotionally and intellectually engage with cultural content (Robin, 2008).

Virtual reality technologies further enrich digital storytelling by allowing users to experience cultural spaces and activities in virtual environments (Champion, 2016). Virtual museums and historical sites created with VR technology enable users to overcome physical limitations and access cultural heritage from different parts of the world (Jerald, 2015). For example, virtually touring an ancient city or historical structure in three dimensions not only provides a visual experience but also helps users better understand the historical context through interactive elements.

Augmented reality (AR) technologies also play an important role in preserving and promoting cultural heritage. AR applications add digital information to real-world environments, allowing users to experience cultural elements around them in a more enriched way (Bower, 2017; İçten & Bal, 2017). For instance, a person visiting a historical building can instantly view its past appearance, construction process, or related historical events through their smart device.

Digital storytelling and VR/AR technologies offer wide-ranging applications in the fields of education and tourism. Educators can use digital storytelling to help students learn about cultural topics more effectively (Jenkins, 2011). VR-supported educational materials allow students to experience historical events or cultural rituals as if they were actually present. In the tourism sector, these technologies enhance the appeal of cultural sites by providing visitors with richer and more personalized experiences.

However, some important considerations must be taken into account for the successful implementation of digital storytelling and VR/AR technologies. First and foremost, ensuring the accuracy and authenticity of the content is critical. Collaboration with experts is necessary to prevent the dissemination of incorrect or misleading information during the representation of cultural heritage in digital environments. Additionally, user privacy and data security should be taken into consideration, especially in protecting personal data collected by VR and AR applications (Noble, 2018; Aydın, 2020; Ergen, 2020).

Digital inequalities are another issue that must be addressed. Since not all users have access to these technologies, there are obstacles to the widespread reach of digital storytelling and VR/AR applications. Therefore, efforts should be made to reduce the digital divide through infrastructure investments and improving digital literacy levels.

These technologies enable cultural narratives to reach broader audiences, allow users to interactively connect with these narratives, and ensure that cultural identity remains dynamic (Papacharissi, 2010; Ergen, 2020). However, to fully realize this potential, issues such as content accuracy, ethical use, user privacy, and digital inequalities must be carefully addressed. By doing so, it will be possible for cultural heritage to remain vibrant and accessible through digital technologies.

3.4. The State of the Risk of Cultural Homogenization and Cultural Identity Loss in the Digitalization Process

While the digitalization process increases cultural interaction on a global scale, it also brings with it the risks of cultural homogenization and loss of cultural identity. As digitalization redefines boundaries and eliminates geographical distances, it fosters closer relationships between different cultures. However, as a result of this closer interaction, there arises the danger that local cultures may dissolve into global cultural currents (Sassen, 2002). Castells (2010) states that modern communication technologies strengthen global networks and that local traditions weaken under this global cultural pressure. This situation reduces cultural diversity and forces local identities to adapt to global norms.

Appadurai's (1996) theory of cultural dimensions also supports this process; digitalization and modern media tools lead to the convergence of different cultures and the erasure of unique cultural elements. Global popular culture, which rapidly spreads through digital media, risks causing local cultural elements to lose their authenticity. In this process, digital technologies not only bring cultures closer together but can also cause local cultures to dissolve within this new "global village." In this context, cultural identity loss emerges as both a threat and a result of the dual impact of digitalization and modern cultural interaction.

Cultural homogenization erodes local identities and cultural practices, making it more difficult for societies to preserve their unique identities (Appadurai, 1996; Pieterse, 2004). Popular culture disseminated through social media platforms marginalizes local traditions and languages, thereby increasing the danger of cultural identity loss (Castells, 2010). The spread of digital media and global communication networks, especially those centered around Western cultural norms and values, facilitates their worldwide dissemination, marginalizing local cultures and reducing their visibility (Said, 1978). Cultural homogenization weakens societal identities and diminishes individuals' sense of cultural belonging, leading to a decline in mutual understanding, tolerance among societies, and weakening of social solidarity (Bauman, 1998; Inglehart & Baker, 2000).

The loss of cultural identity can have negative psychological and social consequences, as it adversely affects how individuals and communities define themselves (Phinney, 1990). The extinction of local languages and traditional

practices hinders the transmission of cultural heritage to future generations and weakens cultural memory (Smith, 2006; Pieterse, 2004).

In the digitalization process, the commercialization of cultural content also emerges as a significant issue. The shaping of cultural values in line with economic interests in digital environments leads to the trivialization of these values and turns cultural heritage into a commercial commodity (Jenkins, 2011). The commercialization of cultural elements can result in compromising the originality of local cultures and the loss of cultural identity. The rapid development of digital media necessitates that local cultural expressions align with global standards, thereby threatening the authenticity of local cultures (Appadurai, 1996; Pieterse, 2004).

Another critical issue faced during the digitalization process is digital inequality. Access to digital technologies may vary significantly among different social groups, making it difficult to share cultural heritage equally in the digital environment. In particular, inadequate digital infrastructure in developing countries may prevent cultural heritage from being digitized and reaching large audiences. Digital inequalities lead to injustice in accessing cultural content and bring about problems such as insufficient representation of local cultures in digital environments (Noble, 2018).

For the protection of cultural diversity and the sustainability of local cultural expressions, the digitalization process must be carefully managed. Considering digitalization as merely a technological process is not sufficient; it may also be necessary to eliminate social inequalities and increase access to digital technologies. The correct and ethical representation of cultural content on digital platforms can help preserve the authenticity of local cultures and strengthen cultural identities. In this context, the proper and ethical use of digital technologies can be of great importance for the protection and sustainability of cultural heritage.

3.5. The State of Cultural Identity Protection Strategies and the Ethical and Legal Framework in the Digital Ecosystem

The widespread use of digital technologies has created new dynamics in the processes of producing, sharing, and preserving cultural content. In this context, developing effective strategies for preserving and strengthening cultural identity in digital ecosystems may be important. These include:

3.5.1. Increasing Digital Literacy

Digital literacy can be defined as providing individuals with the competence to perceive, analyze, evaluate, and produce communication in accordance with the processes presented by written and visual mass media channels (Potter, 2013). The diversification and increase in the number of mass media channels have led to a significant rise in the amount of information and messages delivered to individuals through these media. This increase also brings with it the problem of information pollution (O'Keeffe & Clarke-Pearson, 2011). Media and mass communication channels function as a process in which the information and messages intended for individuals are planned and structured in advance. In this process, individuals are deprived of their capacity for independent thought, reduced to the status of passive recipients (Avcı, 2010).

A great deal of the information accessed through the media via digital tools can be biased, incomplete, misleading, or erroneous. The internet, in particular, harbors intense information pollution, making it increasingly difficult to find accurate and reliable information in this complex informational environment. Children's eating and drinking habits, smoking and alcohol use, sexual preferences, and strategies for coping with anger and violence are significantly influenced by the information they acquire through television and other media. The conscious use of digital devices not only provides surface-level awareness but also offers the opportunity to analyze the deeper meanings that the underlying media channels attempt to convey. Digital literacy skills equip individuals with problem-solving abilities, research capabilities, the acquisition of new skills, collaborative learning, social interaction, and critical thinking (Gillen et al., 2018).

Digital literacy ensures that individuals possess the necessary knowledge and skills to use digital technologies effectively. In today's digital age, where information pollution is abundant, the ability of individuals to access accurate and reliable information depends on the effective development of these skills. Moreover, digital literacy allows individuals to move from a passive receiver role to active participants, thereby contributing to the cultivation of free individuals who can form their own thoughts and make decisions independently, without being directed by the media. Digital literacy programs help individuals develop their skills in producing, sharing, and evaluating digital content (Buckingham, 2007; Potter, 2013). Consequently, it may become possible to more consciously and effectively preserve and disseminate cultural content within the digital ecosystem.

3.5.2. Copyright and the Protection of Cultural Content

Technological developments brought about by the digital age have affected the production, distribution, and consumption of cultural content. With the spread of the internet and the proliferation of digital platforms, the accessibility of cultural works has increased. However, this has also introduced new challenges regarding copyright and the protection of content owners. Protecting digital content through copyright not only safeguards the rights of content owners, but also prevents unauthorized use (Lessig, 2004). In this context, Digital Rights Management (DRM) systems may offer effective tools for the protection and licensing of cultural content.

Digital Rights Management (DRM) is a set of technological systems used to protect the copyrights of digital content and prevent its unauthorized use. DRM applies various encryption and access control mechanisms to regulate how digital media products (e.g., music, film, e-books, and software) can be used. Thanks to these systems, content owners can prevent their works from being copied, shared, or reproduced without permission. By imposing certain usage conditions during the licensing and distribution of digital content, DRM ensures that works are used only by authorized users and under specified conditions. For example, limitations such as allowing an e-book to be opened only on a certain number of devices or rendering a film file inaccessible after it has been viewed can be applied through DRM (Rosenblatt & Dykstra, 2003; Çetin, 2024). In this way, it may become possible to protect cultural content in digital environments and guarantee the material and moral rights of content owners.

Examining the impact of digital technologies on copyright, Lawrence Lessig (2004) emphasizes that existing legal frameworks have failed to adapt to the requirements of the digital age. Lessig argues that since the digital environment makes it easy to copy and disseminate content, copyright systems must be reconsidered. This situation poses significant challenges in protecting content owners' rights. Similarly, Jessica Litman (2001) addresses the complexity of digital copyrights and the difficulties of effectively enforcing these rights within current legal frameworks. According to Litman, the innovations and flexibilities offered by the digital environment necessitate the updating of copyright laws. Both authors point to the need to rethink copyright in the digital age and note that updating legal regulations in this area is inevitable.

James Boyle (2008) and Yochai Benkler (2007) offer important perspectives on managing copyrights and protecting cultural content. Boyle claims that the excessive expansion of copyright laws narrows the public domain, thereby limiting freedom of cultural expression. In his view, having cultural works eventually become part of the public domain supports social creativity and innovation. Boyle argues that limiting the duration of copyright could increase social benefits by expanding access to cultural heritage.

Yochai Benkler, on the other hand, notes that information and cultural production in a networked society is increasingly taking on a more collaborative structure. Benkler suggests that rigid copyright enforcement might hinder these new forms of collaborative production. He recommends making copyrights more flexible and promoting open licensing models. Such approaches can pave the way for cultural innovation by facilitating creative collaboration.

Both thinkers agree that copyright laws must be aligned with contemporary social and technological realities. Their arguments indicate that copyright should strike a balance between protecting the rights of content creators and expanding society's access to cultural works. Such a balance has the potential to both encourage creativity and provide broad social benefits.

Jane C. Ginsburg (2017) and Peter B. Hugenholtz (1996) examine the impact of digital technologies on copyright from different angles. Ginsburg stresses that while new technologies make it easier to distribute works, they also increase the risk of copyright infringement. In this context, Ginsburg points out that international cooperation and harmonized legal regulations are essential for effective copyright protection in the digital environment. She suggests that international collaboration can bridge legal differences between countries, ensuring the protection of copyrights on a global scale.

Peter B. Hugenholtz, on the other hand, highlights the multifaceted nature of debates on the future of copyright in the digital environment. By bringing these debates together, Hugenholtz shows the existence of different perspectives on copyright and how these perspectives interact with technological, economic, and cultural changes. His approach emphasizes that digital copyright is not merely a legal issue, but also a social matter intertwined with technological innovations and cultural norms.

UNESCO's "Convention for the Safeguarding of the Intangible Cultural Heritage" (2003) and the activities of the World Intellectual Property Organization (WIPO) represent important international mechanisms engaged in the global effort to protect cultural heritage. UNESCO's convention recognizes intangible cultural heritage elements—such as traditions, performing arts, social practices, rituals, and festivals—as humanity's common heritage and underscores the importance of transmitting these elements to future generations. The convention provides a framework that encourages member states to cooperate in safeguarding this heritage and ensuring its sustainability. WIPO, for its part, contributes to protecting cultural content in the digital environment by developing international standards in the field of copyright and related rights. In 2016, WIPO worked on developing the legal and technical solutions needed to protect and disseminate cultural content in the digital age. These efforts aim to prevent the unauthorized use of cultural content in digital environments and ensure fair compensation for its creators.

Protecting cultural content is also important for educational and research activities. Strict copyright enforcement can create restrictions on academic work and the development of educational materials. Therefore, supporting fair use and open access policies will promote access to information and cultural development (Litman, 2001).

In conclusion, copyright and the protection of cultural content in the digital age is a complex and multidimensional issue. Technological developments challenge existing legal frameworks and require the development of new approaches. Aligning copyright with the dynamics of the digital environment should protect content owners' rights while also ensuring public access to cultural heritage. Achieving this balance requires international cooperation, flexible legal regulations, and technological solutions that consider users' legitimate rights.

3.5.3. Digital Ethics and Responsible Content Sharing

With the rapid advancement of the digital age, the production, sharing, and consumption of cultural content have undergone significant changes. This transformation has made digital ethics and responsible content sharing even more important. Digital ethics involves the moral principles guiding the behavior of individuals and institutions in the digital environment, while responsible content sharing ensures that cultural heritage is represented respectfully and accurately. In this context, it is crucial to consider cultural sensitivities and prevent stereotypes and prejudices when sharing content on digital platforms (Zuboff, 2019).

In examining the effects of digital technologies on society, Shoshana Zuboff (2019) introduced the concept of surveillance capitalism. This concept refers to the practice of digital platforms collecting user data and using it for economic gain. According to Zuboff, neglecting ethical values in this process leads to violations of privacy and erosion of social values. Therefore, adopting ethical principles in the sharing of digital content and acting with awareness become necessary.

Luciano Floridi (2013) and Charles Ess (2013) have made significant contributions through their studies on ethical responsibilities in the processes of producing and sharing information and content in the digital environment. Floridi, by developing the concept of information ethics, highlights the ethical obligations between digital content producers and users. In his view, the ethical challenges encountered during the production, distribution, and use

of information in the digital environment require guaranteeing the accuracy and reliability of the shared information. Floridi advocates for adherence to ethical standards to prevent information pollution and misinformation.

Charles Ess, in his work on digital media ethics, examines the ethical dimensions of content sharing on digital platforms in detail. Ess emphasizes the importance of taking cultural differences and sensitivities into account in a globalizing digital world. In this context, he posits that preserving and respecting cultural heritage is a fundamental ethical principle in the digital content sharing process.

Stereotypes and prejudices frequently encountered on digital platforms can fuel social fragmentation and discord. In analyzing the impact of digital technologies on human relationships, Sherry Turkle (2011) points out that although people's expectations of technology are increasing, feelings of trust and empathy toward one another are decreasing. This situation can lead to less scrutiny of shared content in the digital environment and the spread of ethically problematic content.

UNESCO (2015b) and the OECD (2016) contribute to the sustainable and equitable development of information societies by publishing important reports and policy recommendations that encourage ethical practices and standards in the digital environment. UNESCO's report emphasizes the need for ensuring access to information, freedom of expression, privacy, and adherence to ethical principles in the digital age. By setting international standards for digital ethics and responsible content sharing, this approach fosters the construction of inclusive information societies committed to ethical values. UNESCO's stance highlights the importance of respecting human rights and fundamental freedoms in digitalization processes.

In a 2016 report, the OECD provides detailed policy recommendations for protecting consumer privacy and promoting ethical practices in the digital environment. According to the OECD, the sustainability and reliability of the digital economy are possible only if users' personal data are effectively protected and high ethical standards are enforced. These recommendations foresee strengthening data protection and privacy principles on digital platforms, as well as placing ethical values at the center.

Rafael Capurro (1990), through the concept of information ecology, describes ethical and responsible content sharing in the digital environment as an element that should be evaluated within a broader ecological system. According to Capurro, information ecology refers to the sustainable and ethically appropriate management of information resources. This concept encompasses not only the processes of producing and consuming information, but also the environmental, social, and ethical aspects of these processes.

Capurro's approach requires considering the human and environmental impacts of information and technology. Information ecology promotes the prioritization of sustainability and ethical principles in the processes of producing, sharing, accessing, and using information. In this context, information ecology treats digital ethics and responsible content sharing as parts of a cycle within a broad ecosystem. This cycle includes elements such as preserving, reusing, and fairly distributing information resources (Capurro, 1990).

In conclusion, digital ethics and responsible content sharing can be important for preserving cultural heritage, maintaining social values, and ensuring that individuals' rights are safeguarded in the digital ecosystem. When sharing content on digital platforms, cultural sensitivities must be respected, stereotypes and prejudices prevented, and the accuracy and reliability of content ensured. In this process, content producers, users, platforms, and international organizations share a common responsibility. By adhering to ethical standards and enhancing digital literacy, the digital world can become a safer and more respectful space.

4. Discussion

In today's rapidly advancing era of digitalization and globalization, digital ecosystems present both significant opportunities and various challenges for the preservation and sustainability of cultural identities. In this article, the effects of digital ecosystems on cultural identities have been examined in detail, and the functions of digital tools

in the preservation of cultural heritage have been analyzed. The analyses highlight the potential benefits of digital technologies in supporting and preserving cultural diversity, while also revealing important risks such as cultural homogenization, the digital divide, and data security.

Firstly, the opportunities provided by digital ecosystems for the digitization, archiving, and dissemination of cultural heritage offer innovative and effective methods for preserving cultural identity. Tools such as digital archiving techniques, virtual reality (VR) and augmented reality (AR) applications, artificial intelligence–supported analyses, and blockchain technologies make it possible for cultural content to reach wide audiences and be passed on to future generations (Sussan & Acs, 2017; Briscoe, 2009). The use of these technologies is crucial for protecting cultural heritage from physical deterioration and for dynamically sustaining it in the digital environment. Particularly, digital storytelling and VR/AR technologies enable the presentation of cultural heritage in interactive and user-friendly formats, allowing users to form a deeper and more interactive connection with that heritage (Manovich, 2013; Champion, 2016).

However, alongside the advantages brought about by the digital transformation process, there are also serious challenges such as cultural homogenization and the digital divide. Under the influence of global digital platforms, local and unique cultures may become increasingly similar, resulting in a decrease in cultural diversity and the erosion of local identities (Appadurai, 1996; Castells, 2010). This situation makes it more difficult for societies to preserve their unique cultural practices and identities, and threatens the richness of cultural diversity. The digital divide, on the other hand, draws attention to the insufficient representation of certain communities in digital spaces due to inequalities in access to technological infrastructure (Noble, 2018). These inequalities disadvantage communities with no or limited access to digital technologies when it comes to preserving and disseminating their cultural heritage in the digital environment.

In this context, it is necessary to develop strategic and comprehensive approaches for ensuring the sustainability of cultural identity within digital ecosystems. Increasing digital literacy can enable individuals to use digital technologies effectively and consciously, thereby contributing to the proper and ethical preservation of digital content (Potter, 2013; Gillen et al., 2018). Digital literacy programs allow individuals to improve their ability to cope with information pollution, evaluate digital content, and think critically. In this way, the accuracy and reliability of cultural content shared within digital ecosystems can be increased, and information pollution can be prevented.

The development of copyright and Digital Rights Management (DRM) systems also plays an important role in protecting cultural content. Protecting cultural works in digital environments through copyright safeguards the rights of content owners while also preventing unauthorized use of these works (Lessig, 2004; Rosenblatt & Dykstra, 2003). In this framework, international cooperation and harmonized legal regulations are of critical importance for the protection and sharing of digital content (Ginsburg, 2017; Hugenholtz, 1996). The frameworks provided by international organizations such as UNESCO and the World Intellectual Property Organization (WIPO) guide the protection and sustainability of cultural heritage in digital environments (UNESCO, 2003; WIPO, 2016). Adopting such international standards supports the global protection of digital content and the maintenance of cultural diversity.

Digital ethics and responsible content sharing also emerge as vital elements in protecting cultural heritage within digital ecosystems. Considering cultural sensitivities, and preventing stereotypes and prejudices when sharing content on digital platforms are of great importance (Zuboff, 2019; Floridi, 2013; Ess, 2013). The development of ethical obligations among digital content producers and users ensures that cultural heritage is represented respectfully and accurately. In this context, the adoption of digital ethical principles and the strengthening of ethical standards contribute to making digital ecosystems safer and more respectful environments (Turkle, 2011; Capurro, 1990).

Additionally, digital storytelling and VR/AR technologies offer new approaches to cultural heritage preservation and enable an interactive experience of cultural content (Robin, 2008; Jerald, 2015). The applications of these technologies in the fields of education and tourism not only make cultural heritage accessible to larger audiences

but also contribute to the preservation of cultural diversity. However, for these technologies to be successfully implemented, important issues such as ensuring the accuracy and authenticity of content and reducing digital inequalities must be taken into account (Noble, 2018; Papacharissi, 2010). Increasing infrastructure investments and raising levels of digital literacy will allow all communities to use digital technologies equally and effectively, helping to reduce digital inequalities.

In summary, the effects of digital ecosystems on the preservation and sustainability of cultural identities may encompass both opportunities and challenges. The conscious and strategic use of digital technologies holds great potential for the protection of cultural diversity and the strengthening of cultural identities. However, to fully realize this potential, digital ecosystems must be supported by ethical, legal, and strategic frameworks. Factors such as enhancing digital literacy, protecting copyrights, embracing digital ethical principles, and reducing digital inequalities may be crucial to the success of these processes in preserving and disseminating cultural heritage in digital environments.

For future research, there is a need for studies that examine more deeply the effects of digital ecosystems on cultural identities. Understanding how digital technologies are used in different cultural contexts and how they affect cultural diversity will contribute to the development of policy and practice recommendations. Furthermore, addressing the ethical and legal dimensions of digital technologies more comprehensively will enable more effective use of digital ecosystems in preserving cultural identity. As digital ecosystems continue to evolve in parallel with technological innovations, they will present both opportunities and new challenges for preserving and sustaining cultural identities.

Finally, given the dual impacts of digitalization on cultural identities, it may be important to manage digital technologies within a framework of social equity, cultural diversity, and ethical values. The conscious and strategic use of digital ecosystems stands out as an indispensable tool in the process of preserving cultural heritage and passing it on to future generations. In this regard, effectively shaping digital technologies to strengthen cultural identities and ensure the sustainability of cultural diversity can support efforts to protect and enhance the cultural richness of modern societies.

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A Study of Teachers' Opinions on the Development of Educational Quality Assurance Systems in Phanat Nikhom Group 4 Schools Chonburi Primary Educational Service Area Office 2

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Abstract
The objectives of this research were to 1) study the level of teachers' opinions on the development of an internal quality assurance system in schools in Phanat Nikhom Group 4, under the Office of Chonburi Primary Educational Service Area 2, 2) compare teachers' opinions on the system's development, categorized by gender, age, education level, and work experience, and 3) gather suggestions, problems, and solutions related to the system's development. The study included 113 teachers, 1 educational administrator, 1 educational supervisor, and 1 university lecturer. Data collection utilized questionnaires and interviews, analyzed using mean scores, percentages, standard deviations, t-tests, and one-way ANOVA. The findings revealed that 1) the overall level of teachers' opinions on the internal quality assurance system was very high in all aspects, 2) there were no statistically significant differences in opinions when classified by gender, age, education level, or work experience, and 3) suggestions emphasized improving the quality assurance system through the development of manuals, conducting training workshops, promoting Professional Learning Community (PLC) activities for knowledge exchange, and establishing a follow-up team to ensure the sustainability of improvements. These measures aim to enhance the effectiveness and long-term impact of the internal quality assurance system in schools.

Keywords: Teachers' Opinions, System Development, Quality Assurance

1. Introduction

In today's era of rapid transformation driven by information and technology, Thai society is significantly impacted, necessitating the development of human resources with the potential to compete effectively on a global scale. People are the key factor determining an organization's success or failure. Human resource management must align with strategic planning to enable personnel to work efficiently, particularly in enhancing the quality of education through internal quality assurance within educational institutions.

For the country to achieve stability and sustainability, there must be a focus on developing individuals capable of adapting to changes in the 21st century. This includes applying the principles of the sufficiency economy philosophy to sustainably develop the Thai social structure. The National Economic and Social Development

Board has outlined a 20-year national strategy and the National Education Framework 2017–2031 to integrate learning with the goals of sustainable development.

Thailand's educational reform emphasizes decentralization and the creation of an effective quality assurance system. This is stipulated in the National Education Act B.E. 2542 (1999) and its amendments in 2002, aiming to raise educational standards in schools. Studies on issues related to quality assurance in educational institutions have identified key problems such as improper management and a lack of teacher and personnel involvement. Therefore, school administrators play a crucial role in fostering an environment conducive to collaboration.

Given these circumstances, the researcher is interested in studying teachers' opinions in schools under the Phanat Nikhom Group 4, under the jurisdiction of the Chonburi Primary Education Service Area Office 2, regarding approaches to developing internal quality assurance systems in schools. This study is expected to provide essential insights for improving internal quality assurance systems in schools and serve as a guideline for the development of quality assurance systems within the Office of the Basic Education Commission in the future.

2. Research Objectives

- To study the opinions at various levels of teachers regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2. The focus will be on surveying the teachers' attitudes and perceptions towards the development process of this system, to gather information that can be used for improving and enhancing its implementation.
- To compare teachers' opinions regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, by classifying them based on various factors such as gender, age, education level, and work experience, in order to study the differences in opinions arising from these factors.
- To collect suggestions, issues, and solutions related to the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, with the focus on finding practical solutions that can be used to improve the quality assurance system in the future effectively.

3. Research Hypotheses

- Teachers' opinions regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, will differ by gender. It is anticipated that teachers of different genders may have varying attitudes and perspectives on the development of the internal quality assurance system in the schools.
- Teachers' opinions regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, will differ by age group. Teachers in different age groups may have different perceptions or attitudes toward the internal quality assurance system in the schools.
- Teachers' opinions regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, will differ by education level. Teachers with different levels of education may have different views or evaluations of the development of the internal quality assurance system in the schools.
- Teachers' opinions regarding the development of the internal quality assurance system in schools within the Phanat Nikhom 4 group, under the Chonburi Primary Education Service Area 2, will differ by work experience. Teachers with varying levels of work experience may have different opinions or evaluations regarding the development of the internal quality assurance system in the schools.

4. Literature Review

4.1. Quality Assurance in Education

The development of educational quality in educational institutions is an essential process aimed at ensuring the quality of education. Its goal is to be accountable to students, parents, and the community. Educational institutions must have a clear quality development plan that aligns with government policies and meets the needs of the community and local areas. The implementation of this process must show tangible results through evaluation and monitoring.

4.2. Definition of Quality Assurance in Education

The development of educational quality relies heavily on the quality assurance process. Quality assurance in education is a process that focuses on developing standards and quality through collaboration from all sectors, including educational personnel, parents, communities, and relevant organizations. The implementation of this process must adhere to the principles of decentralization and participation, with clear goals to ensure that the results align with the needs of society and the country. The quality assurance process includes both internal and external evaluations, particularly evaluations by the Office for National Education Standards and Quality Assessment (ONESQA), which plays a crucial role in ensuring quality and building public confidence. Educational quality focuses on integrating three aspects: quality according to educational standards, quality that meets the needs of service recipients, and quality that aligns with the goals of the service providers.

4.3. Scholarly Definitions of Quality Assurance in Education

Somchai Janyaipiboon (2012) defines quality assurance in education as the process of monitoring and evaluating the quality of education conducted by personnel within the educational institution or the governing body responsible for overseeing the institution.

Lamool Rodkwan (2012) defines internal quality assurance as activities carried out by the educational institution to develop quality and build confidence among parents and the community.

Amnuay Mee-Sri (2012) defines internal quality assurance within educational institutions as the evaluation and monitoring of quality by educational personnel or the governing body, along with management aimed at continuously developing students.

The Office of the Higher Education Commission (2014) explains that internal quality assurance refers to the process of creating systems and mechanisms aimed at developing, monitoring, reviewing, and evaluating the operations of higher education institutions. It must align with established policies and objectives, including achieving the quality standards set by the institution or the governing body. Internal quality assurance is thus part of the educational management process that must be carried out continuously without interruption. This process includes the preparation of an annual report that evaluates internal quality and presents the results to the governing body and relevant organizations. The results of the evaluation will be made publicly available to inform the development of educational quality and standards. The internal quality assurance process supports external quality assurance by complying with the Ministry of Education's regulations on quality assurance published in 2018, which require monitoring and evaluation to ensure that education is delivered according to standards at each level and type of education. Internal quality assurance mechanisms help ensure that educational institutions can provide education according to standards and achieve set goals, while also building confidence among students and parents in the quality of education and the institution's ability to deliver effective teaching and learning.

In conclusion, quality assurance in education is a process that ensures the effective management of education, with a focus on continuous improvement of student quality and educational management. This system includes both internal quality assurance, which is implemented by the educational institution itself, and external quality

assurance, conducted by relevant organizations. Both parts play crucial roles in enhancing the standards and outcomes of education to meet societal needs.

5. Research Method

5.1 Population and Sample Group

- Population: The study focuses on teachers from the "Phanat Nikhom 4" schools under the Chonburi Primary Education Service Area 2, totaling 158 teachers during the 2023 academic year.
- Sample Group: A sample of 113 teachers was selected, with a proportionate distribution by school and using simple random sampling.

5.2 Data Collection Tools

Two main tools are employed for data collection:

- Questionnaire: The questionnaire is divided into two sections:
    1. Demographic information (gender, age, education level, work experience) using a checklist.
    2. Likert-scale questions assessing opinions on the development of the school's quality assurance system, with a scale of 1 (least) to 5 (most). The researcher uses this data to categorize responses into levels such as "most" or "least" favorable.
- Interview: Interviews focus on understanding issues in the quality assurance system and potential solutions, conducted with school administrators from the selected schools.

5.3 Development of Data Collection Tools

- Questionnaire:
    1. Literature Review: The questionnaire was designed after studying relevant theories and research on educational management and quality assurance systems.
    2. Validation: The draft was reviewed by experts for content validity, using the Index of Item Objective Congruence (IOC), with acceptable values above 0.5. It was adjusted based on expert feedback.
    3. Reliability Testing: A pilot test was conducted with a non-sample group to calculate Cronbach’s alpha coefficient, with results showing a high-reliability score of 0.93.
- Interview:
    1. Literature Review: The interview questions were designed based on a comprehensive review of relevant research.
    2. Expert Review: The draft was reviewed for clarity and comprehensiveness by an academic advisor.
    3. Finalization: Adjustments were made based on feedback before proceeding with the interviews.

5.4 Data Collection Process

- Questionnaire:
    1. The researcher coordinated with the Chonburi Education Service Area 2 to gather permission from school directors to distribute questionnaires.
    2. Surveys were distributed either in-person or via Google Forms, with follow-ups made to ensure timely responses.
- Interview:
    1. The researcher arranged interviews with school administrators, using official letters to request participation and scheduling interviews based on mutual availability.

5.5 Data Analysis

- Quantitative Data (Questionnaire):
    1. Descriptive statistics such as means, percentages, and standard deviations will be used to analyze responses.
    2. Data will be categorized into five levels based on the Likert scale, assessing the teachers' perspectives on the quality assurance system.
- Qualitative Data (Interviews):
    1. Thematic analysis will be used to summarize and identify key issues and suggested solutions regarding the quality assurance system.

5.6 Statistical Methods

- Reliability and Validity:
    1. Content Validity: The IOC was used to assess the relevance and clarity of the questionnaire.
    2. Reliability: Cronbach's alpha coefficient was calculated for consistency.
- Descriptive Statistics:
    1. Mean, percentage, and standard deviation will be used for summarizing data.
- Inferential Statistics:
    1. t-test: Used for comparing two groups.
    2. ANOVA: Used for comparing three or more groups, with pairwise comparisons performed if significant differences are found.

This approach ensures the research will be methodologically robust, with both qualitative and quantitative data providing a comprehensive understanding of the issues and potential solutions regarding the development of the quality assurance system in the schools.

6. Data Analysis

6.1. Research Findings

The analysis of the data regarding teachers' opinions on the development of the internal quality assurance system within the schools of the Phanus Nikom 4 group under the Chonburi Primary Educational Service Area Office 2 is shown in Table 2.

Table 2: Mean and Standard Deviation of Teachers' Opinions on the Development of the Internal Quality Assurance System within Schools in the Phanus Nikom 4 Group under the Chonburi Primary Educational Service Area Office 2

(n = 113)

Aspect of Quality Assurance Operation	Teachers' Opinion on the Development of the Quality Assurance System		
	$\overline{X}$	S.D.	Rank
1. Implementation of evaluation and quality assurance within the school	4.68	1.40	Highest
2. Operation according to the educational development plan of the school	4.66	0.51	Highest
3. Preparation of the educational development plan aiming for quality standards	4.62	0.53	Highest
4. Preparation of self-evaluation report	4.61	0.52	Highest
5. Follow-up on the implementation to ensure quality according to educational standards	4.59	0.55	Highest
6. Determining educational standards of the school	4.56	0.55	Highest

total	4.62	0.68	Highest

From Table 2, the teachers' opinions on the development of the internal quality assurance system in schools within the Phanus Nikom 4 group, Chonburi Primary Educational Service Area Office 2, overall, were at the "most" level ($M = 4.62$, S.D. $= 0.68$). When considered individually, all aspects were rated at the "most" level. The top three aspects in terms of mean scores, listed from highest to lowest, were: Implementation of evaluation and quality assurance within the school (M = 4.68, S.D. = 1.40).

Operation according to the educational development plan of the school (M = 4.66, S.D. = 0.51) Preparation of the educational development plan aiming for quality standards (M = 4.62, S.D. = 0.53)

Table 3: Comparison of Teachers' Opinions on the Development of the Internal Quality Assurance System within the Schools of the Phanus Nikom 4 Group, Chonburi Primary Educational Service Area Office 2, by Gender

(n = 113)

Aspect of Quality Assurance Operation	Gender				*t*	*p*
	Male		Female			
	$\overline{X}$	*S.D.*	$\overline{X}$	*S.D.*		
1. Implementation of evaluation and quality assurance within the school	4.75	0.27	4.51	0.47	2.23	0.03
2. Operation according to the educational development plan of the school	4.77	0.34	4.59	0.45	1.81	0.07
3. Preparation of the educational development plan aiming for quality standards	4.76	0.28	4.63	0.43	1.38	0.17
4. Preparation of self-evaluation report	4.76	0.31	4.55	0.50	1.95	0.05
5. Follow-up on the implementation to ensure quality according to educational standards	4.74	0.35	4.56	0.50	1.56	0.12
6. Determining educational standards of the school	4.73	0.35	4.58	0.45	1.47	0.15
total	4.75	0.29	4.57	0.43	1.90	0.18

*P>0.05

From Table 3, comparing the opinions of male and female teachers on the development of the internal quality assurance system within the schools of the Phanus Nikom 4 group, Chonburi Primary Educational Service Area Office 2, it is found that there is no statistically significant difference between the genders in terms of their overall opinions on this matter. The p-values for all aspects are greater than 0.05, indicating that the difference is not significant.

Table 4: Comparison of Teachers' Opinions on the Development of the Internal Quality Assurance System in Schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, Categorized by Age (One-way ANOVA)

n=113

Item	**Source of Variance**	**SS**	**df**	**Ms**	**F-test**	**Sig.**
1. Establishing Educational Standards for Schools	Between Groups	.503	3	.168	.847	.471
	Within Groups	21.589	109	.198		
	Total	22.093	112			
2. Developing a Quality-Oriented Educational Plan	Between Groups	.476	3	.159	.848	.471
	Within Groups	20.414	109	.187		
	Total	20.891	112			

3. Implementing the Educational Development Plan	Between Groups	.567	3	.189	1.138	.337
	Within Groups	18.110	109	.166		
	Total	18.678	112			
4. Conducting Internal Evaluation and Quality Assurance	Between Groups	1.473	3	.491	2.279	.083
	Within Groups	23.475	109	.215		
	Total	24.947	112			
5. Monitoring Actions for Quality Assurance	Between Groups	.830	3	.277	1.215	.308
	Within Groups	24.807	109	.228		
	Total	25.637	112			
6. Preparing Self-Evaluation Reports	Between Groups	1.117	3	.372	2.002	.118
	Within Groups	20.279	109	.186		
	Total	21.397	112			
Overall	Between Groups	.727	3	.242	1.480	.224
	Within Groups	17.851	109	.164		
	Total	18.578	112			

*P>0.05

From Table 4, the comparison of teachers' opinions on the development of the internal quality assurance system in schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, categorized by age, shows that overall, there were no statistically significant differences.

Table 5: Comparison of Teachers' Opinions on the Development of the Internal Quality Assurance System in Schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, Categorized by Educational Level (One-way ANOVA)

n=113

Item	**Source of Variance**	**SS**	**df**	**Ms**	**F-test**	**Sig.**
1.Establishing Educational Standards for Schools	Between Groups	.114	1	.114	.576	.450
	Within Groups	21.979	111	.198		
	Total	22.093	112			
2. Developing a Quality-Oriented Educational Plan	Between Groups	.000	1	.000	.000	.998
	Within Groups	20.891	111	.188		
	Total	20.891	112			
3. Implementing the Educational Development Plan	Between Groups	.087	1	.087	.520	.472
	Within Groups	18.590	111	.167		
	Total	18.678	112			
4. Conducting Internal Evaluation and Quality Assurance	Between Groups	.179	1	.179	.804	.372
	Within Groups	24.768	111	.223		
	Total	24.947	112			
5. Monitoring Actions for Quality Assurance	Between Groups	.057	1	.057	.247	.620
	Within Groups	25.580	111	.230		
	Total	25.637	112			
6. Preparing Self-Evaluation Reports	Between Groups	.167	1	.167	.874	.352
	Within Groups	21.230	111	.191		
	Total	21.397	112			
Overall	Between Groups	**.081**	**1**	**.081**	**.485**	**.488**
	Within Groups	**18.498**	**111**	**.167**		
	Total	**18.578**	**112**			

*P>0.05

From Table 5, the comparison of teachers' opinions on the development of the internal quality assurance system in schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, categorized by educational level, reveals that both overall and in individual aspects, there were no statistically significant differences.

Table 6: Comparison of teachers' opinions on the development of the internal quality assurance system in schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, categorized by work experience, using One-way ANOVA

n=113

Item	Source of Variance	SS	df	Ms	F-test	Sig.
1. Establishing Educational Standards for Schools	Between Groups	.437	3	.146	.733	.535
	Within Groups	21.656	109	.199		
	Total	22.093	112			
2. Developing a Quality-Oriented Educational Plan	Between Groups	.151	3	.050	.265	.851
	Within Groups	20.739	109	.190		
	Total	20.891	112			
3. Implementing the Educational Development Plan	Between Groups	.437	3	.146	.871	.458
	Within Groups	18.240	109	.167		
	Total	18.678	112			
4. Conducting Internal Evaluation and Quality Assurance	Between Groups	.548	3	.183	.816	.488
	Within Groups	24.399	109	.224		
	Total	24.947	112			
5. Monitoring Actions for Quality Assurance	Between Groups	.315	3	.105	.451	.717
	Within Groups	25.322	109	.232		
	Total	25.637	112			
6. Preparing Self-Evaluation Reports	Between Groups	.418	3	.139	.724	.540
	Within Groups	20.979	109	.192		
	Total	21.397	112			
Overall	Between Groups	**.295**	**3**	**.098**	**.586**	**.626**
	Within Groups	**18.284**	**109**	**.168**		
	Total	**18.578**	**112**			

*P>0.05

From Table 6, it was found that the comparison of teachers' opinions on the development of the internal quality assurance system in schools under Phanat Nikhom Group 4, Chonburi Primary Educational Service Area Office 2, categorized by work experience, showed no statistically significant differences.

Results of Data Analysis on the Synthesis of Teachers' Opinions Regarding the Development of the Internal Quality Assurance System in Panusnikom 4 Schools Under the Office of Chonburi Primary Educational Service Area 2 Based on the synthesis of interviews with three experts, using the content analysis technique, the following conclusions were drawn regarding the teachers' opinions on the development of the internal quality assurance system in Panusnikom 4 schools under the Office of Chonburi Primary Educational Service Area 2. Key development approaches include Role of the School Board The board should participate in planning, monitoring, and supporting teaching standards. Provide constructive feedback during educational development planning meetings. Use SWOT Analysis to enhance vision and align plans with educational goals and standards. Project and Task Improvement Employ continuous evaluation using the CIPP Model. Revise projects during implementation and apply evaluation results to improve the following year. Budget Management Focus on outcome-based budgeting and prioritize tasks effectively. Build external support networks to enhance resource allocation. Development of Information Systems Utilize information technology for accuracy and up-to-date data management. Establish a data center with clearly assigned personnel responsibilities. Annual Reporting Disseminate information through various channels such as websites, documents, and social media. Ensure easy and quick access to relevant stakeholders. These approaches emphasize the importance of systematic management and efficient resource utilization in enhancing the internal quality assurance system in schools.

7. Discussion of the Research Results

The study of teachers' opinions in the Panusnikom 4 schools revealed that teachers had a high level of support for the implementation of the educational quality assurance system in all aspects, including evaluation, adherence to educational development plans, and the creation of plans according to standards. This reflects an awareness of the roles of teachers and educational staff, consistent with previous studies, which emphasize the importance of teacher involvement and support from school administrators. When comparing teachers' opinions based on gender, age, educational level, and experience, no significant differences were found. This indicates a school management system that is consistent and responsive to the needs of staff in all groups. For the development of the educational quality assurance system, five key approaches were identified: 1) Increasing the role of the school board to engage in all processes, such as planning, monitoring, and connecting with the community; 2) Developing school improvement plans using SWOT analysis to set goals and vision; 3) Evaluating and improving projects using the CIPP model to assess and enhance efficiency at every stage; 4) Managing resources transparently by utilizing technology and building external support networks; and 5) Developing an information system that focuses on using technology to enhance data accuracy and modernity in management. The results of this study lead to strategies for enhancing educational quality that promote transparency in management, support participation from all sectors, and foster sustainable, systematic, and effective development of students.

8. Recommendations

8.1. Recommendations for the Implementation of Research Results

1. School Administrators: School leaders should use the evaluation results to raise awareness and improve the quality assurance system by developing clear manuals and guidelines. These documents should explain the processes and steps of the quality assurance system in a way that teachers and staff can easily understand and apply. Additionally, training sessions should be organized for teachers on the quality assurance system, focusing on practical training and solving issues that arise during the evaluation process. The internal evaluation system should be developed to cover all dimensions of educational quality, such as teaching, management, and stakeholder satisfaction.

2. Related Agencies: Agencies involved should promote a team-working culture by encouraging teachers and staff to collaborate through Professional Learning Community (PLC) activities to share experiences and development strategies. Continuous feedback from teachers should be collected, and meetings or surveys should be held regularly to improve the quality assurance system to meet teachers' needs.

3. Knowledge Exchange Activities: Knowledge exchange activities between schools in the Panusnikom 4 group should be encouraged to enhance collaboration, share best practices, and improve the effectiveness of the quality assurance system.

4. Establishing a Monitoring Team: A team should be established to continuously monitor the implementation of the quality assurance system in schools. This will ensure that research results are applied effectively and lead to the desired outcomes. It will also serve as a starting point for the ongoing improvement of the internal quality assurance system in response to changes in the school context.

8.2. Recommendations for Future Research

1. Comparative Study Across Different Schools: Future research should compare results with schools in different areas or schools that vary in size, physical characteristics, or structural aspects. This comparison can identify factors that might influence teachers' opinions about the quality assurance system in diverse contexts, such as differences in resources, organizational culture, or staff readiness.

2. Factors Affecting Quality Assurance Implementation: Future studies should explore in-depth the factors that influence the implementation of the quality assurance system, especially in schools under the supervision of the Chonburi Primary Educational Service Area 2. Research should examine both internal factors (e.g., staff, budget, and resources) and external factors (e.g., government policies and community cooperation).

3. Impact of Educational Policy Changes: Future research should investigate the impact of changes in national or local education policies on teachers' opinions and practices regarding the quality assurance system. Such studies should analyze both the positive and negative impacts to identify ways to improve policies to better align with real conditions and help teachers implement the quality assurance system more effectively.

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The Study of Participatory Management of School Administrators in the Witthayaprakan Campus Schools Under Samutprakan Secondary Educational Service Area

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Abstract
The research on the study of participatory management of school administrators in the Witthayaprakan campus schools under the Secondary Educational Service Area Office of Samut Prakan aims to: 1) investigate the level of participatory management of school administrators in the Witthayaprakan campus schools; and 2) compare the level of participatory management among schools of different sizes under the same educational office. The sample consists of 229 teachers.Stratified random sampling, The research instrument is a questionnaire using a 5-point Likert scale, divided into two sections: Part 1 gathers general demographic information about the respondents, and Part 2 assesses the participatory management practices of school administrators in the Witthayaprakan campus schools. The reliability of the instrument was found to be 1.00. Statistical methods used in data analysis include frequency, percentage, mean, standard deviation, and One-Way ANOVA. The research findings are as follows: 1) The overall level of participatory management of school administrators in the Witthayaprakan campus schools is very high across all aspects. When considering specific aspects, the ranking of mean scores from highest to lowest is as follows: participation in benefits, decision-making participation, commitment, autonomy in work, goal and objective setting, and mutual trust. 2)The comparison of participatory management levels based on different school sizes revealed a statistically significant difference at the .05 level.

Keywords: Participatory Management, Administrators, Educational Management

1. Introduction

In an era where both the global and Thai societies are facing changes in various aspects—economic, social, and political—one thing that cannot be avoided is the rapid advancement of science and technology. These changes directly impact the operations of the government, including management in the education sector, which is a crucial foundation for national development. The government of Thailand recognizes the importance of adapting to global trends and societal changes, thus establishing a governance model of "participatory democracy" that focuses on allowing the public to participate in decision-making and government administration, both politically and administratively. Allowing the public to take part in these processes leads to more transparent government operations and ensures they can effectively respond to social situations.

In the field of education, the National Education Act B.E. 2542 (1999) and its amendments (No. 4) B.E. 2562 (2019) stipulate that the decentralization of education management should promote the participation of educational institutions in administration. The decentralization in various areas, such as academic affairs, human resource management, and general administration, allows school administrators and teachers to make independent decisions and have a role in improving the effectiveness of schools. Participatory management in schools is important for creating a democratic atmosphere within organizations. By offering opportunities for educational personnel to participate in decision-making and in setting the direction of schools, it fosters pride and affection for the organization. Personnel involved in these processes develop a sense of attachment to the organization and are motivated in their work. Decentralization in schools also helps staff to effectively address problems that arise within the school.

Participatory management helps foster good relationships among members of the organization, encourages teamwork, promotes the exchange of ideas, and facilitates joint decision-making. This leads to greater organizational agility and the ability to adapt to changes. Participation in various processes also enhances transparency and shared accountability, which are key factors in developing schools to be efficient and of high quality. Participatory management plays an important role in the development of schools and educational organizations in Thailand. The government's adjustment to allow citizens and educational personnel to participate in decision-making and administration has fostered cooperation and efficient development in all areas.

For the reasons mentioned above, the researcher, as a teacher in schools within the Sakhwittayakhak District under the Samut Prakan Secondary Educational Service Area Office, is interested in studying the participatory management of school administrators in this district to examine the level of management.

2. Research Objectives

1. To study the level of participatory management among school administrators in Witthayaprakan campus schools under the Samutprakan Secondary Educational Service Area.
2. To compare the level of participatory management among school administrators in Witthayaprakan campus schools under the Samutprakan Secondary Educational Service Area, categorized by school size.

3. Research Hypotheses

In this study, the researcher has established the following research hypotheses:

1. The level of participatory management among school administrators in Witthayaprakan campus schools under the Samutprakan Secondary Educational Service Area is at a high level or above.
2. The level of participatory management among school administrators in Witthayaprakan campus schools under the Samutprakan Secondary Educational Service Area differs significantly when categorized by school size.

4. Literature Review

The importance of participation has been emphasized by researchers, academics, and educational organizations as follows:

Nattapon Phanno (2023) stated that participation is a management process in which administrators provide opportunities for employees or stakeholders to take part in expressing opinions, planning operations, setting goals and objectives, as well as participating in decision-making, sharing benefits, and evaluating outcomes. This approach aims to drive the organization efficiently and achieve maximum benefits.

Chanidapha Leekhamngam (2021) explained that participation refers to providing opportunities for individuals to develop their potential by voluntarily engaging in activities related to community development. This involves identifying problems, decision-making, planning activities, implementing plans, and ensuring equitable benefits.

Phenprapa Somphong (2020) defined participation as a connection between personnel and organizations or educational institutions. It involves providing opportunities for individuals or groups to collaborate by sharing opinions, participating in decision-making, problem-solving, and determining work methods. This fosters teamwork, decentralization, job satisfaction, and organizational advancement to achieve goals effectively.

Pajanee Chantee (2018) stated that participation means involving individuals or groups in activities or operations, including sharing knowledge, joint decision-making, and collaboration in planning, resource allocation, coordination, and monitoring. It also includes evaluating the implementation of strategic plans.

Bounyang Vonmanee (2017) described participation as a process where individuals engage in activities through cooperation within an organization. This includes setting missions and goals, sharing ideas, studying problems, planning, executing, and evaluating outcomes.

Vroom and Deci (1970, as cited in Kanchana Iadsuk, 2017) described participation as the extent to which individuals feel involved in decision-making. When individuals experience satisfaction in effective work, they develop a stronger commitment to their tasks and perform well, ultimately contributing to the expansion of organizational goals. This concept emphasizes self-management over organizational control.

In summary, participation involves providing opportunities for all relevant parties to engage in various organizational processes, such as decision-making, planning, implementation, and evaluation. This approach ensures that the organization progresses efficiently and achieves maximum benefits.

4.1. Meaning of Participative Management

Nathaphon Phanno (2023) states that participative management refers to a process where managers open opportunities for employees or stakeholders of an organization to take part, express opinions, plan operations, set goals, and objectives. It also includes involvement in benefits, decision-making, and evaluation, to ensure the organization can operate effectively and maximize its benefits.

Watcharakorn Chudklangla (2022) defines participative management as a process where the organization's leadership allows members to participate in sharing their opinions in carrying out activities aimed at achieving set goals. This creates motivation and responsibility for members who have jointly planned, implemented, and evaluated the organization’s strategies and policies. It is based on democratic principles, which help reduce internal conflicts and generate shared benefits that achieve the organization’s ultimate goals.

The Research Administration Committee, Nakhon Si Thammarat Primary Education Area Office 3 (2021: 14) indicates that participative management is a process where individuals are involved in various aspects of operations, including sharing opinions, decision-making, responsibility, planning, and evaluation, using creativity and expertise to reach objectives or solve problems that may arise in the management process.

Chaiya Hanuphap (2021) emphasizes that participative management refers to the process where involved parties participate in setting goals and making decisions on key issues in organizational management, including joint acknowledgment, planning, implementation, decision-making, control, and evaluation of activities, freely and willingly, to ensure work is carried out effectively.

Porntep Hemranon (2021) explains that participative management is the opportunity for individuals or groups to engage directly or indirectly in the operation. It is essential for schools to encourage feedback and involvement; otherwise, employees may feel disconnected from the organization's activities, making it harder to achieve objectives.

Jittra Kaewma (2020) describes participative management as a process where stakeholders in education management actively engage in thinking, decision-making, planning, and working together, fostering a sense of commitment and agreement on the direction of school management toward achieving its objectives.

Amornphak Pingkamlang (2019) defines participative management as allowing employees or subordinates to engage in planning, decision-making, solving problems, setting objectives, and implementing strategies collectively. This approach involves trust, commitment, shared goals, and freedom to operate in order to achieve organizational efficiency and success.

Niweat Wongchuwanna (2017) defines participative management as a process where managers motivate employees or stakeholders to participate in thinking, decision-making, working, and taking responsibility for improving the quality of their work. This involves the opportunity to engage in work operations both directly and indirectly, with shared decision-making, planning, execution, and evaluation, aiming for organizational success.

Summary: Participative management is the process by which managers use a participatory approach to drive organizational quality in an effective direction for maximum benefit. The seven components include mutual trust, goal-setting, work autonomy, commitment, involvement in benefits, decision-making, and performance evaluation.

4.2. Importance and Benefits of Participative Management

Several researchers and scholars have highlighted the importance and benefits of participative management, as follows:

Watcharakorn Chudklangla (2022: 31) states that the significance and benefits of participative management include giving personnel at all levels the opportunity to participate in management by sharing opinions, making decisions, planning, and performing tasks. This ensures the organization operates effectively and achieves shared goals and objectives, thus gaining maximum benefits.

Wannapha Jaeyen (2021: 108) mentions that participative management in educational institutions plays a key role in fostering a democratic atmosphere, allowing education personnel to express their opinions. This helps employees feel proud and motivated, emphasizing the decentralization of authority so that everyone has a say in setting the institution's goals and addressing potential future issues.

Wiboolorn Nilphibul (2020: 29) notes that participative management is crucial for developing organizational quality. The involvement of all parties, motivated by voluntary engagement, creates bonds of commitment, leading to efficient teamwork and improved results.

Chai Anon Kaewngoen (2020: 21) states that the benefits of participative management in educational institutions can be divided into three aspects: Benefits for the Institution: Participative management enhances communication, reduces conflict, lowers costs, increases productivity, and improves the institution's adaptability to change. Benefits for Administrators: It makes it easier for administrators to manage teachers and staff, as decision-making is more effective, backed by input from all parties, and highlights managerial capabilities. Benefits for Teachers and Staff: Participatory management strengthens relationships between teachers, staff, and management. Teachers gain trust, improve professional capabilities, take on more responsibility, and feel more connected to the organization.

Parinwat Thomkajang (2018: 15) explains that participative management generates satisfaction for both employees and superiors by creating diverse perspectives, reducing resistance from subordinates, and allowing employees to utilize their knowledge and skills to achieve shared objectives.

Niweat Wongchuwanna and Intha Sirirun (2017: 186) elaborate on the benefits of participative management, emphasizing that it leads to smoother operations, a sense of belonging to the organization, stronger team planning, and improved organizational performance. When employees participate in decision-making, planning, and evaluation, it increases transparency and accountability, leading to better results.

Participative management is driven by multiple theories, including democratic involvement, motivation, social psychology, leadership, and role structure theories. These theories can be integrated to adapt to the organization's context, enhancing teamwork and shared decision-making across the process, resulting in organizational success.

Likert (1961, cited in Jiraphorn Phetthat, 2015) outlines the core elements of participative management as follows: Managers listen to feedback and suggestions from subordinates freely. Managers motivate employees, fostering morale. Internal communication is smooth and efficient. There is open and wide feedback between managers and subordinates about the organization's goals and operations. Decisions are made collectively across all levels of the organization, with active participation. Work control is decentralized, focusing on problem-solving. Managers prioritize employee development through training to achieve high performance and meet goals.

Summary: The importance and benefits of participative management include fostering teamwork, adaptability, accountability, and effective decision-making, which leads to organizational flexibility and the ability to respond to both internal and external changes effectively.

5. Research Methodology

This research aims to study participatory management by school administrators in the Witthayaprakarn School Cluster under the Secondary Educational Service Area Office in Samut Prakan Province. The objectives are to study and compare participatory management categorized by position, school size, and work experience. The research methodology is outlined as follows:

5.1 Population and Sample

5.1.1. Population

The population consists of 565 teachers and school administrators under the Secondary Educational Service Area Office in Samut Prakan Province, Witthayaprakarn School Cluster.

5.1.2. Sample

The sample size was determined using the G*Power program (version 3.1.9.2), with a Power Analysis of 0.99, a significance level of 0.01, and a medium effect size of 0.3. The resulting sample size is 229 participants, categorized by school size

5.2 Research Instruments

The data collection instrument is a questionnaire developed based on academic documents and previous studies. The questionnaire is divided into two parts:

- Part 1: A checklist focusing on the respondents' demographic information.
- Part 2: A five-point Likert scale measuring participatory management across seven aspects.

5.3. Development of Research Instruments

1. Review relevant theories, documents, and research on participatory management.
2. Design a questionnaire divided into two parts:
    - Part 1: Respondents' demographics, including position, school size, and work experience.
    - Part 2: Seven aspects of participatory management, including: Trust, Setting goals and objectives, Autonomy in work performance, Commitment, Participation in benefits, Involvement in decision-making, Participation in evaluation
3. Submit the questionnaire to advisors and experts for content validation (IOC).
4. Revise the questionnaire based on suggestions.

5. Conduct a pilot study to test the questionnaire's reliability using Cronbach's Alpha, resulting in a reliability score of 0.98.

5.4 Data Collection

1. Request authorization for data collection from relevant institutions.
2. Distribute the questionnaire with a request letter to targeted schools.
3. Collect and follow up on unreturned questionnaires.
4. Verify the completeness of the returned questionnaires.

5.5 Data Analysis

1. Verify the completeness of all returned questionnaires.
2. Score the responses according to predetermined criteria.
3. Analyze the data using statistical software as follows:

Descriptive analysis: Frequency and percentage of respondents' general information.
Mean and standard deviation for levels of participatory management.
One-way ANOVA to compare participatory management by school size, followed by Scheffe's method for pairwise comparison if significant differences are found.

5.6 Statistical Methods

1. Instrument Validation
   - Index of Item-Objective Congruence (IOC)
   - Cronbach's Alpha Coefficient for reliability
2. Descriptive Statistics
   - Percentage
   - Mean
   - Standard Deviation
3. Hypothesis Testing
   - One-way ANOVA for comparing participatory management levels.
   - Scheffe's method for pairwise comparisons if significant differences exist.

6.Research Findings

Table 1: The mean, standard deviation, interpretation, and participatory management by the school administrators of the Sathawittayakhet Wittyaprakarn Network School under the Samut Prakan Secondary Education Service Area Office overall

(n=110)

	Participatory Management Aspect	Level of Implementation		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Participation in Benefits	4.69	0.37	Highest	1
2	Participation in Evaluation	4.68	0.41	Highest	2
3	Participation in Decision-Making	4.67	0.40	Highest	3
4	Commitment	4.66	0.39	Highest	4
5	Autonomy in Work Performance	4.65	0.39	Highest	5
6	Setting Goals and Objectives	4.64	0.40	Highest	6
7	Trust	4.63	0.38	Highest	7
	Overall (X_{tot})	4.65	0.36	Highest	

From Table 1**,** it can be observed that the overall participatory management of school administrators in the Sathawittayakhet Wittyaprakarn Network School under the Samut Prakan Secondary Education Service Area Office is at the highest level ($\bar{x}$ = 4.65, S.D. = 0.36). When considering each aspect individually, the highest ranking in terms of mean score is Participation in Benefits ($\bar{x}$ = 4.69, S.D. = 0.37), followed by Participation in Evaluation ($\bar{x}$ = 4.68, S.D. = 0.41), and Trust ($\bar{x}$ = 4.63, S.D. = 0.38), all of which were rated at the "Most" level.

Table 2: Comparison of Participatory Management of School Administrators in the Sathawittayakarn School Cluster, under the Samut Prakan Secondary Educational Service Area Office, categorized by school size.

Participatory Management of Administrators	**Source of Variance**	**SS**	**df**	**MS**	**F**	**p**
1. Trust	Between groups	6.064	2	3.032	25.404	.000
	Within groups	26.972	226	.119		
	Total	33.036	228			
2. Goal Setting and Objectives	Between groups	6.974	2	3.487	25.673	.000
	Within groups	30.695	226	.136		
	Total	37.669	228			
3. Autonomy in Work Execution	Between groups	6.444	2	3.222	24.604	.000
	Within groups	29.596	226	.131		
	Total	36.040	228			
4. Commitment	Between groups	6.526	22	3.263	25.503	.000
	Within groups	28.917	226	.128		
	Total	35.440	228			
5. Benefit Participation	Between groups	6.792	2	3.396	29.382	.000
	Within groups	26.121	226	.116		
	Total	32.913	228			
6. Decision-making Participation	Between groups	7.160	2	3.580	26.977	.000
	Within groups	29.991	226	.133		
	Total	37.151	228			
7. Evaluation Participation	Between groups	8.170	2	4.085	30.007	.000
	Within groups	30.768	226	.136		
	Total	38.938	228			
Overall	**Between groups**	**6.818**	**2**	**3.409**	**32.265**	**.000**
	Within groups	**23.879**	**226**	**.106**		
	Total	**30.697**	**228**			

*Significant at the .05 level.

From Table 2, it is found that school administrators and teachers from schools of different sizes have significantly different opinions on the participatory management of school administrators in the Sathawittayakarn School Cluster under the Samut Prakan Secondary Educational Service Area Office, both overall and in specific areas, with statistical significance at the .05 level.

7. Research Discussion

The research findings on the opinions of administrators and teachers in the Wityaprakarn School Cluster, under the Samut Prakan Secondary Education Service Area, reveal several key points for discussion:

Participatory Management by School Administrators: The participatory management of school leaders in the Wityaprakarn School Cluster was rated the highest in both overall and individual aspects, based on analysis across seven areas. Every area received the highest ratings, with the most notable participation occurring in benefit sharing, followed by participation in evaluation and mutual trust. This highlights the importance of collaboration in an organization with participatory management. This management style allows all parties in the school to collaborate, whether in planning, expressing opinions, coordinating, or monitoring outcomes. The administrators play a crucial role in demonstrating trust in teachers' and staff's abilities and knowledge, fostering confidence and cooperation. Such collaboration helps teachers and staff become more committed to the organization, especially when teachers are involved in decision-making and evaluating performance, which increases responsibility and cooperation in the school's development. Previous studies, such as those by Phonthep Hemranon (2021), Penpich Phaphongyun (2017), and Sirikaset Petchka (2022), all point out that participatory management positively impacts the development and success of educational institutions by building shared responsibility across all areas, including academic management and evaluation. Moreover, it fosters good relationships between administrators and teachers and propels the institution in a positive direction. The participatory management in the Wityaprakarn School Cluster serves as a successful model for achieving organizational success by having administrators and teachers work together to advance the school in alignment with the needs of society in the 21st century.

Trust: The participatory management of administrators in the Wityaprakarn School Cluster was rated highest in the trust aspect ($\bar{x}$ = 4.63, S.D. = 0.36). The analysis of individual components showed that the administrators created an atmosphere of mutual trust among teachers ($\bar{x}$ = 4.83, S.D. = 0.43), followed by administrators acting as role models for trust ($\bar{x}$ = 4.67, S.D. = 0.56), and creating an environment conducive to recognizing and learning from problems in an open and natural manner ($\bar{x}$ = 4.57, S.D. = 0.61). This could be attributed to the administrators' acceptance of the teachers' knowledge and abilities, which builds trust. Additionally, mutual respect within the school fosters a positive working environment, as administrators listen to feedback and trust the completion of tasks, leading to smooth and efficient collaboration. This is consistent with the study by Vibulorn Nilphiboon (2020), which also found that trust in participatory management in schools under the Nonthaburi Primary Education Area 1 was rated highest.

Goal Setting and Objective Management: Overall, participatory management of goal-setting and objectives by administrators in the Wityaprakarn School Cluster received the highest rating ($\bar{x}$ = 4.64, S.D. = 0.40). Teachers' understanding of goals and objectives was the highest ($\bar{x}$ = 4.68, S.D. = 0.54), followed by administrators' ability to guide teachers in aligning with set plans ($\bar{x}$ = 4.67, S.D. = 0.57), and the clear system for monitoring work progress ($\bar{x}$ = 4.61, S.D. = 0.59). This could be due to administrators providing clear guidance on goals and objectives, fostering collaboration and communication within the school. This finding aligns with Vibulorn Nilphiboon's study (2020), which found that participatory management also scored highest in goal-setting and objectives for schools under Nonthaburi Primary Education Area

Autonomy in Work: In terms of autonomy, participatory management in the Wityaprakarn School Cluster was rated highest overall ($\bar{x}$ = 4.65, S.D. = 0.39). The highest individual aspects were administrators encouraging teachers to be creative ($\bar{x}$ = 4.69, S.D. = 0.55), giving teachers freedom to express opinions ($\bar{x}$ = 4.68, S.D. = 0.52), and allowing teachers to officially report their work progress ($\bar{x}$ = 4.61, S.D. = 0.63). The participatory management style that grants teachers autonomy fosters an atmosphere of trust, encourages creativity, and helps build a sense of ownership, improving motivation and work performance. This finding is consistent with Vibulorn Nilphiboon's study (2020) that found autonomy in participatory management was also rated highest in schools under Nonthaburi Primary Education Area 1.

Commitment: In the area of commitment, the participatory management of the Wityaprakarn School Cluster was rated highest overall ($\bar{x}$ = 4.66, S.D. = 0.39). Teachers' commitment to the quality of their work and the institution was the highest ($\bar{x}$ = 4.69, S.D. = 0.55), followed by administrators creating a friendly atmosphere ($\bar{x}$ = 4.68, S.D. = 0.53), and being a role model for the school's vision ($\bar{x}$ = 4.60, S.D. = 0.58). This participatory management style fosters high commitment because it inspires motivation, creates a friendly atmosphere, and provides clear support. Teachers feel more dedicated to their work, which aligns with Vibulorn Nilphiboon's study (2020).

Benefit Participation: Administrators and staff in the Wityaprakarn School Cluster were rated highest in the area of benefit participation ($\bar{x}$ = 4.69, S.D. = 0.37). Teachers focused on the benefits of the students and school over their own interests ($\bar{x}$ = 4.75, S.D. = 0.51), administrators acted as role models by focusing on the school's benefits ($\bar{x}$ = 4.72, S.D. = 0.51), and teachers showed behavior of accepting mistakes and collaborating on solutions ($\bar{x}$ = 4.66, S.D. = 0.57). This is due to administrators and staff prioritizing students' benefits and acting as role models, creating shared values within the organization, which aligns with Jittra Kaewma's study (2020).

Decision-Making Participation: Administrators' participatory management in decision-making in the Wityaprakarn School Cluster was rated highest overall ($\bar{x}$ = 4.67, S.D. = 0.40). Parents were involved in decisions about evaluation methods and activities ($\bar{x}$ = 4.69, S.D. = 0.56), followed by involvement in activities ($\bar{x}$ = 4.68, S.D. = 0.55), and teachers' involvement in planning and implementing school projects ($\bar{x}$ = 4.62, S.D. = 0.57). This is because parents are involved in decisions about evaluations and activities, while the school committee helps set policies, creating a sense of ownership and responsibility for educational development.

Evaluation Participation: Finally, evaluation participation was rated the highest in the Wityaprakarn School Cluster ($\bar{x}$ = 4.68, S.D. = 0.41). Stakeholders participated in evaluating projects after implementation ($\bar{x}$ = 4.71, S.D. = 0.53), followed by teachers' involvement in setting evaluation criteria ($\bar{x}$ = 4.70, S.D. = 0.52), and the school disseminating evaluation results ($\bar{x}$ = 4.62, S.D. = 0.62). This is because stakeholders evaluate projects and activities, while teachers play a key role in guiding evaluation methods, fostering a sense of ownership and responsibility.

Lastly, there were significant statistical differences in the opinions of administrators and teachers in schools of different sizes, with larger schools more likely to implement participatory management due to a larger staff that can collaborate effectively. This fosters team work and the exchange of ideas that better meet the needs of students and the school. Conversely, medium and smaller schools must work closely to overcome staffing limitations and still achieve effective collaboration, contributing to the school's improvement and educational quality.

8. Suggestions

From the results of this research, the researcher suggests the following:

8.1. Suggestions for Future Research

8.1.1 The research design should be mixed-methods, combining both quantitative and qualitative research to obtain in-depth data through qualitative research.
8.1.2 Future studies should explore the factors influencing participatory management by school administrators in the Sakhwittayakhak District of the Samut Prakan Secondary Educational Service Area Office to determine whether different school contexts have distinct influencing factors.
8.1.3 A study should be conducted on the relationship between the management style of school administrators and participatory management in the Sakhwittayakhak District of the Samut Prakan Secondary Educational Service Area Office to confirm the most suitable management style.

8.2. Suggestions for Utilizing the Research Results:

8.2.1 Trust Building: Administrators should foster an environment where the faculty can recognize and address issues in a natural and fair manner.
8.2.2 Goal Setting and Objectives: The institution should establish a clear system for monitoring and following up on plans, making the progress easily observable.
8.2.3 Autonomy in Work: Administrators should allow teachers to report their work progress officially.
8.2.4 Commitment: Administrators should set a good example by demonstrating a positive attitude towards the school's vision.
8.2.5 Participation in Benefits: Teachers should demonstrate behaviors that acknowledge mistakes and suggestions in the school's operations and work together to solve problems in appropriate ways for the benefit of the institution.

8.2.6 Participation in Decision-Making: Teachers should be involved in the initiation, planning, and setting of projects, tasks, and activities for the institution.
8.2.7 Participation in Evaluation: The institution should disseminate information, news, and evaluation results of projects and activities to all personnel, so they can use the information to improve operations in the future.

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Methods for Supporting the Development of Students' Critical Thinking Skills: An Experiment

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Abstract
In the era of globalization and evolving education, one of the primary objectives of higher education institutions is to ensure student success by developing their critical thinking skills. Academics and employers in higher education have identified critical thinking as one of the most essential competencies for students, emphasizing the need to pay greater attention to its development. According to the findings of a study examining the conditions for identifying students' critical thinking skills, 28 students (82.3%) conducted surface-level analysis and made general observations in assignments involving reports and essays, while 6 students (17.6%) demonstrated the ability to express their own understanding, take notes, and identify challenges. Since this skill occupies a critical role in modern education, it can be developed through specialized methods and exercises in instructional activities. Based on this, experimental lessons were conducted, and the results were evaluated. To assess changes in students' critical thinking skills, enthusiasm, and self-confidence, 9 criteria were selected for self-assessment before and after the experiment. The average score before the experiment was 0.72, while the average score after the experiment increased to 0.82, indicating a positive improvement.

Keywords: Critical Thinking, Established Patterns, Methods, Logical Thinking

1. Introduction

The course "Foundations of Learning and Teaching," outlined in the teacher training curriculum, is one of the core foundational subjects in teacher education and is taught in the first semester of the second year. This course helps students understand how children develop, grow, and learn, as well as the teacher’s role in supporting and guiding this process. It also encourages students to adopt a positive attitude toward their professional activities. Through the content and methodology of this course, students are expected to develop critical thinking skills, motivation, self-confidence, the ability to engage in discussions, problem-solving, and other intellectual qualities. It aims to foster flexible thinking and attitudes.

In today's era of globalization and information overload, many students tend to accept knowledge and information from various sources without critical processing or reflection. This course, through its teaching methods, focuses on cultivating critical thinking skills and fostering the habit of analyzing and evaluating information rather than mindlessly copying or accepting it. The method used to develop students' critical thinking skills is aimed at enhancing their ability to analyze information, view problems from multiple perspectives, and make sound decisions.

Critical thinking is closely related to other abilities such as creativity, logic, or intuition, and it allows us to create new strategies and develop alternative ways of understanding and interpreting things. Critical thinking, as defined by Linda Elder (2008, p. 38), is the ability to analyze and improve the quality of one's thinking by skillfully examining the issues at hand and applying intellectual standards. It is not about how we accept information, but rather how we think about it. Critical thinking involves evaluating, organizing, verifying, and assessing information through specific criteria to determine what to believe. It allows individuals to reflect, question, and engage in self-directed inquiry (Duro, 2013, p. 275).

According to scholars like Kenneth Ziegler and Daniel Listen, critical thinking within the context of teaching can be viewed from three levels: understanding learning/teaching practices, examining these practices through theories, concepts, social norms, justice, human rights, and legal aspects. At this level, questions such as "How should we teach children?" "How should we meet their needs?" and "What kind of activities should we plan to support their learning and development?" is posed (Baigalmaa, 2015, p. 20).

Critical thinking also means having a fair and balanced approach, recognizing both the good and the bad aspects of an issue. It involves analyzing a topic or problem realistically and drawing appropriate conclusions based on evidence (Bold, 2016, p. 27). This is a cognitive skill that includes asking questions, analyzing, critiquing, synthesizing, evaluating, and drawing conclusions. Logic is a tool commonly used in critical thinking (Philo, 2018, p. 15).

Critical thinking involves evaluating available evidence, observations, and tasks to draw conclusions (Edward, 2017). This process includes assessing and analyzing factual data, considering different perspectives, and making judgments. The subject of critical thinking is complex and has multiple interpretations, but it generally involves evaluating evidence, scrutinizing claims, and assessing arguments (Clark & John, 2019).

In a study conducted on the psychological characteristics of 204 university students, which examined the scope of students' critical thinking, the results indicated that their critical thinking capacity was below average, with an average score of 2.8. This suggests that student's ability to think creatively, understand relationships between phenomena, and reflect deeply is underdeveloped, with their intellectual habits and cognitive skills remaining weak (Erdenechuluun, L., 2022).

2. Research Methodology

The study was conducted using a holistic approach, primarily employing qualitative analysis methods. To identify the current status of how students' critical thinking skills are being supported, a survey was conducted. The research involved 18 second-year students from the Preschool Education program at the School of Education, Arkhangai, Mongolian National University of Education (MNUE). The study included experimental lessons within the content framework of the *Foundations of Learning and Teaching* course, where specific analysis was carried out, and feedback was collected from students through self-assessment surveys. The research was carried out in the following stages:

2.1. Identifying the role of critical thinking skills in teaching through a survey

Survey Objective: To identify which teaching methods are most commonly used to develop students' critical thinking skills.

Survey Scope: 45 teachers from higher education institutions.

1. Is there a need to develop critical thinking skills in students?
    - A. Very much – 77.7%
    - B. Yes – 8.8%
    - C. No – 13.3%
    - D. Don't know – 0%

2. Which teaching strategies do you primarily use to support the development of students' critical thinking skills? (Select 3 commonly used methods)
   Graph 1.

The survey results show that 86.5% of the teachers (39 teachers) believe that there is a need to develop critical thinking skills in students.

2.2. Developing and testing certain methods aimed at promoting students' critical thinking skills

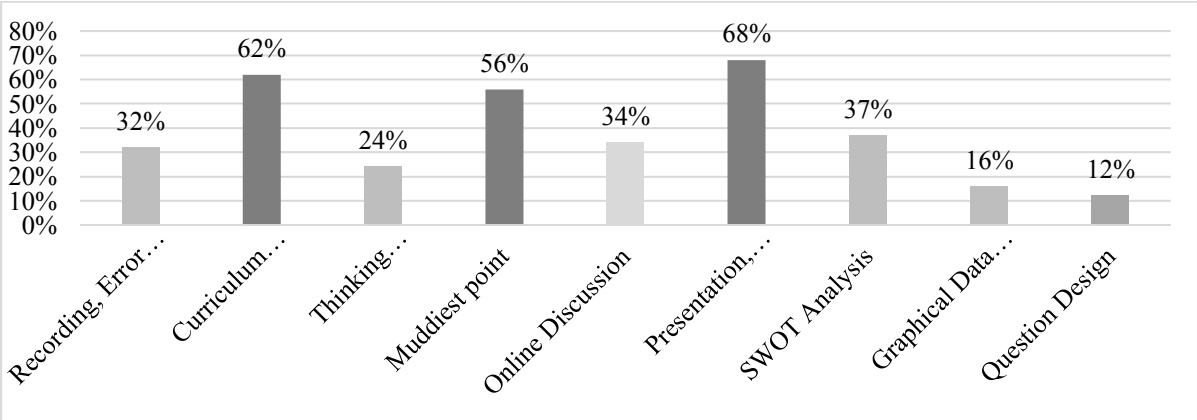
The methods were applied through experimental lessons conducted between September and November of 2020 and 2023 (over a period of 4 weeks). The results were then evaluated.

2.3. Evaluating changes in students' attitudes and self-confidence towards critical thinking

To measure the changes in students' enthusiasm and self-confidence regarding critical thinking, a self-assessment survey was conducted both before and after the experimental lessons with second-year students. (The survey is available in **Appendix 1**.)

3. Research Results

3.1. Students' Critical Thinking Skills and Teaching



Graph 1: Teaching Strategy of the Instructor

Based on the above survey results, it appears that teaching strategies to support students' critical thinking skills are relatively underutilized, indicating the need to test and implement such strategies. (See Graph 1).

3.2. Development and Implementation of Teaching Strategies to Support Students' Critical Thinking Skills Process and Outcomes of Experimental Lessons

Table 1: Planning of Experimental Lessons

Experimental Plan	Name of the Experiment:	Learning and Pedagogy Fundamentals
	Purpose of the Experiment:	Testing methods to support students' critical thinking skills.
	Class Format:	Seminar 2, 3
	Scope:	2nd-year students of the Department of Preschool Education, Ar Teacher School, Mongolian University of Education (MNUE).
	Experimental Group and Number of Students:	PET II a, 19 students
	Control Group and Number	PET II b, 20 students

of Students:	
Date, Duration:	2023.09.09-13, 90 minutes 2023.09.16-20, 90 minutes
Topic:	Child Development and Growth Child development and the influencing factors
Methods Used in the Experiment:	Presentation and analysis of articles, problem-solving, case study method
Materials Used:	Academic papers, analysis guidelines, worksheets, progress tracking charts
Assignment Task:	Select an academic article related to the seminar topic, reflect on it. Choose one academic article published in the "Mongolian Child" (Mongolian heritage child) journal and perform an analysis on it.

Table 2: Criteria and Results for Analyzing Students' Academic Presentations and Articles

№	Criteria for Analyzing the Academic Article	Total number of students: 34	Percentage	Ranking
1	Identifying the main issue of the research	24	70.5%	2
2	Expressing one's own understanding of the subject matter of the research	6	17.6%	7
3	Thoroughly reviewing the academic article and generating reflective questions	9	26.4%	5
4	Keeping notes using worksheets	18	52.9%	3
5	Identifying the challenges encountered	11	32.3%	
6	Being able to clearly define the main idea of the research	16	47.0%	4
7	Analyzing the research based on reliable sources	26	76.4%	1
8	Logically defending one's position	7	20.5%	6
	Average Score	15	44.1%	

When the research results are ranked, the analysis of students' reports and essays shows that the ability to analyze reliable sources and identify key issues in the research is quite strong, with scores ranging from 70.5% to 76.4%. However, the ability to logically defend their position and express their understanding of the research topic is relatively weak, with scores ranging from 17.6% to 20.5%.

Table 3: Planning of Experimental Lessons

Direction, Criteria	
Objective of the experiment:	To test methods aimed at promoting students' critical thinking skills.
Type of class:	Seminar
Scope:	Second-year students of the Faculty of Education, Mongolian University of Education (MUE)
Dates and Duration:	November 4-8, 2023, 90 minutes November 18-22, 2023, 90 minutes
Topic:	Teacher's job description, standard job description, and standards Teacher's ethical development and current status
Methods used:	SWOT analysis, Identifying the 10 most difficult points, Creative project
Materials used:	Published academic articles, SWOT analysis worksheets, Experiment record tables

Task description:	Carefully read articles on the same topic (teacher's reputation) written by four researchers from different time periods and perform a SWOT analysis based on the following template.

3.3. Analysis Process and Results of Teacher-Student Assignment Performance

Assignment Description: Carefully read the articles and research papers written by four researchers from different time periods on the same topic (the reputation of teachers) and perform a SWOT analysis using the following format:

1. Research Article 1
2. Research Article 2
3. Research Article 3
4. Research Article 4

Table 4: Student's SWOT Analysis

Strengths	Weaknesses
What are the strengths and advantages that current teachers have in terms of enhancing their reputation? o Effective teaching methods, good delivery of lessons o Knowledge and education o Salary and compensation o Communication skills o	What are the weaknesses that could tarnish the reputation of current teachers? o Ethical deterioration of teachers o Some teachers give grades in exchange for money o Outdated teaching methods o Shallow or weak knowledge and education o Lack of communication skills o Irresponsibility
Opportunities What opportunities and resources are available to improve the social perception that influences the reputation of teachers? o Teacher training and development o Increasing salaries and compensation o Social welfare and protection o The interest and foundational education of students entering teacher training institutions o Ensuring all teachers maintain ethical standards o Listening attentively to students, being patient, and understanding their perspectives o Continuously improving teachers' professional knowledge and skills o Increasing government awards and incentives for teachers o	Threats What risks and challenges may arise if the factors negatively affecting the reputation of teachers are not addressed? o It will impact the future development and growth of students. o The value and esteem of teachers will decrease. o Students may fall into moral confusion. o Unfair practices may become widespread. o Students may disrespect teachers and fail to engage in mutual interaction. o Teachers' attitudes may remain unchanged.

Арга /Method/	Уншиж олж илрүүлсэн санал	percent	frequency	Amplitude
S	4	16%	/	4
W	6	24%	≠	
O	9	36%	/	9
T	6	24%	≠	
Нийт	25			3.25

From the frequency of students' SWOT analysis, it was found that common negative and challenging factors such as ethics, communication skills, superficial knowledge, and outdated teaching methods were identified under the **WT** category. Additionally, the opportunities to improve the social perception that influences the

reputation of teachers were thoroughly analyzed and evaluated, with 9 suggestions and comments, accounting for 36% of the total responses (see Table 4).

To identify changes in students' enthusiasm and self-confidence toward critical thinking, a self-assessment survey was conducted before and after the experimental lessons on critical thinking methods, held in November 2023, with 18 second-year students. The average scores from the survey were compared for each question before and after the experiment.

Table 5: Descriptive Statistics / Pre-experiment Results (2023.09.06)

Critical Thinking Criteria	N	Mean	Std. Deviation	Variance
1. I question and verify whether the things I hear in class are believable and credible.	18	.722	.4609	.212
2. When reading or introducing theories, explanations, or conclusions in class, I check whether there is supporting evidence.	18	.611	.5016	.252
3. I treat the class materials as a starting point and try to develop my own opinions on them.	18	.833	.3835	.147
4. I try to test my own ideas related to what I have learned in class.	18	.722	.4609	.212
5. Every time I read or hear a claim or conclusion in class, I think about possible alternative explanations.	18	.889	.3234	.105
6. When reading class materials, I create questions that help me focus and understand better.	18	.722	.4609	.212
7. If I get confused about what I am reading, I go back and try to figure it out.	18	.778	.4278	.183
8. I ask myself questions to confirm my understanding of the material studied in class.	18	.556	.5113	.261
9. When reflecting on a topic, I aim to understand not just what to read but also what I should learn from it.	18	.722	.4609	.212
Valid N (listwise)	18			

Table 6: Post-experiment Results (2023.11.05)

	N	Mean	Std. Deviation	Variance
Q1 EA	18	.7778	.42779	.183
Q2 EA	18	.8889	.32338	.105
Q3 EA	18	.8889	.32338	.105
Q4 EA	18	.7778	.42779	.183
Q5 EA	18	.9444	.23570	.056
Q6 EA	18	.6111	.50163	.252
Q7 EA	18	.9444	.23570	.056
Q8 EA	18	.8333	.38348	.147
Q9 EA	18	.7778	.42779	.183

Explanation: To assess students' critical thinking skills, enthusiasm, and confidence, 9 specific criteria were selected for self-evaluation. Before the experiment, the average scores ranged from 0.55 to 0.88, with a high standard deviation of 0.32 to 0.51. After the experiment, the average scores ranged from 0.61 to 0.94, with a decrease in standard deviation (acceptable range) from 0.23 to 0.32. This suggests improvement in the students' critical thinking abilities. Specifically, the average score increased from 0.72 before the experiment to 0.82 after the experiment, indicating progress in students' critical thinking, analytical skills, enthusiasm, and self-assessment. For example, after the experiment, standard deviation decreased from 0.32 to 0.23, reflecting that students started considering alternative explanations when reading or listening to conclusions. (See Table 6).

4. Conclusion

Based on the research findings, it is important to emphasize the significance of experimenting with various methods to support the development of students' critical thinking skills. The following conclusions can be drawn from the study:

- The methods used to enhance students' critical thinking supported the development of fundamental skills such as curiosity, exploration, and skepticism, which were evident from the research results.
- When using methods such as analysis of academic papers, data analysis, problem-solving, discussions, debates, case studies, identifying key challenges, brainstorming techniques, creative projects, and SWOT analysis, students demonstrated creative thinking, analysis, reflection, and idea generation.
- By consistently integrating these methods into the curriculum, students' critical thinking skills can develop, and they can be shaped into independent individuals with problem-solving abilities.
- Future research could involve a broader scope, including more students from universities and colleges, utilizing advancements in technology and research methodologies.
- As students' critical thinking skills develop, it could positively influence their preparation for the workforce and success in their careers.
- It is crucial to implement wide-scale training, seminars, and projects at universities to develop students' critical thinking skills in a comprehensive manner.

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Revolutionizing Fitness: The Intersection of Artificial Intelligence and Physical Activity

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Abstract
The rapid advancement of artificial intelligence (AI) technology is significantly reshaping the fitness industry, creating opportunities for enhanced personalization and effectiveness in exercise routines. This study explored the transformative impact of AI-powered wearables and smart fitness devices on individual fitness outcomes and overall physical activity levels. Utilizing a quantitative approach, the research involved a cross-sectional survey of 90 pre-service physical education students from the University of Education, Winneba, who provided insights into their experiences with AI technologies in fitness. The study employed a five (5) point Likert-scale questionnaire to assess respondents' perceptions of AI's influence on their exercise regimens. Data was analyzed using means, standard deviation, independent samples t-test and Pearson's correlation. The findings revealed that AI technologies significantly enhance the personalization of fitness programmes, enabling users to achieve tailored workout structures and set personalized fitness goals. Participants reported increased physical activity levels and improved consistency in their fitness routines, highlighting the positive correlation between AI integration and individual fitness outcomes. Additionally, the study emphasizes the necessity of addressing ethical considerations, in terms of algorithmic partiality and data confidentiality, to ensure equitable access to AI-driven fitness solutions. It was recommended that fitness organizations and AI developers should focus on user education, engagement, and continuous improvement of user experience to maximize the benefits of AI technologies.

Keywords: Fitness, Artificial Intelligence (AI), Physical Activity, Pre-Service Teachers

1. Introduction

The rapid development of digital technology and an increasing focus on holistic health and wellness have dramatically shifted the global fitness sector (Global Wellness Institute, 2021). This transformation is underscored by the emerging relationship between artificial intelligence (AI) and physical activity, positioning AI as a pivotal force in reshaping fitness practices. Traditionally, exercise programmes and fitness regimens have relied on standardized, one-size-fits-all approaches that often overlook individuals' distinct physiological and behavioral traits (Petersen & Gebhardt, 2017). This lack of personalization has limited the effectiveness of fitness interventions, as they fail to accommodate the unique needs of diverse populations. However, the rise of AI-powered technologies is ushering in a new era characterized by tailored, flexible, and data-driven fitness solutions, fundamentally disrupting these outdated paradigms. The potential applications of this technology are extensive and varied, ranging from AI-powered virtual coaches that can dynamically adjust workout plans based on real-time biometric data and individual user preferences (Liao et al., 2020) to intelligent wearables that analyze a person's movement patterns and provide immediate feedback on exercise form and technique (Srivastava et al.,

2020). These innovations not only enhance individual exercise experiences but also facilitate more effective training regimens that adapt to the user's progress.

As wearable technology and other digital health tools provide access to more data, fitness professionals should endeavour to empower and educate their clients on how to properly analyze and use the data to promote improvements in important health behaviours, like physical activity, sleep, and recuperation (Newsome (2023). Exercise experts can assist their customers in making long-lasting, sustainable changes that improve general health and wellness by counselling them on the importance of the data and how to use it to make wise decisions. For instance, personalized exercises, real-time performance analytics, and advice from qualified trainers are all provided by Apple Fitness+, a subscription-based fitness service that pairs with the Apple Watch (McAvoy, 2023). Moreover, the application of AI within the broader ecology of physical activity holds transformative potential beyond personal fitness. AI algorithms can be employed to enhance sports performance analysis, identify athletic talent, optimize urban infrastructure to support active transportation, and guide public health initiatives aimed at increasing physical activity levels in communities. Despite these promising advancements, the integration of AI in fitness raises significant ethical concerns that must be critically examined. Issues related to algorithmic bias, data privacy, and the potential for technology to exacerbate existing disparities in access to health and wellness services are paramount (Morley et al., 2019). For example, if AI systems are trained on biased datasets, they may perpetuate inequalities in health recommendations and access to personalized fitness solutions, thereby widening the gap between different socioeconomic groups. Additionally, the collection and analysis of personal health data pose risks to individual privacy, necessitating stringent safeguards to protect user information. In light of these complexities, the purpose of this study is to investigate the intricate relationship between artificial intelligence and physical exercise.

1.1. Statement of the Problem

The swift penetration and progression of artificial intelligence (AI) technologies has begun to reshape the landscape of the fitness industry, presenting both opportunities and challenges that warrant thorough investigation. Despite the promising potential of AI to personalize fitness solutions, enhance individual performance, and promote overall health, there remains a significant gap in understanding the extent of its transformative impact on exercise behaviors and fitness outcomes. Many existing fitness programmes continue to rely on traditional, standardized approaches that fail to accommodate individual differences in physiology, motivation, and lifestyle, leading to suboptimal results and disengagement among users (Petersen & Gebhardt, 2017).

The AI-powered algorithms analyze user data to recommend tailored workout routines. Furthermore, while AI technologies, such as wearable devices and virtual coaching platforms, offer innovative tools for personalized training, there is limited empirical research that systematically assesses their effectiveness in improving user engagement, adherence to fitness regimens, and overall physical activity levels. The lack of comprehensive studies in this area hinders our understanding of how these technologies can be best integrated into existing fitness paradigms to maximize their benefits and ensure equitable access for diverse populations. Additionally, the ethical implications of deploying AI in fitness contexts raise critical concerns that must be addressed. Issues of algorithmic bias, data privacy, and the potential for exacerbating health disparities pose significant risks to users. For instance, if AI systems are designed without considering diverse user demographics, they may inadvertently perpetuate inequalities in health outcomes and access to personalized fitness solutions. As such, there is a pressing need to explore not only the technological advancements but also the broader societal implications of AI integration in fitness.

Given these gaps in knowledge and the importance of addressing ethical considerations, this study aims to investigate the multifaceted relationship between artificial intelligence and physical fitness. By examining how AI-powered technologies transform individual fitness experiences and their implications for public health and social equity, this research seeks to contribute to an in-depth understanding of the challenges and opportunities presented by the intersection of AI and fitness. Ultimately, this investigation will inform stakeholders, including fitness professionals, health policymakers, and technology developers, about best practices for leveraging AI in ways that promote inclusivity, engagement, and positive health outcomes for all users.

1.2. Purpose of the Study

The study interrogated the transformative impact of the integration of artificial intelligence (AI) technology across fitness and physical activity.

1.3. Research Objectives

Specifically, the study sought to:

1. Ascertain ways AI-powered wearables and smart fitness devices transforming the personalization and effectiveness of individual exercise routines?
2. Assess how AI technologies improve individual fitness outcomes and overall physical activity levels among users.

1.4. Research Questions

1. What ways are AI-powered wearables and smart fitness devices transforming the personalization and effectiveness of individual exercise routines?
2. In what ways do AI technologies improve individual fitness outcomes and overall physical activity levels among users?

1.5. Hypotheses

Ho1: There are no statistically significant differences in perceptions of the effectiveness of AI technologies in fitness between male and female users.
Ho2: There is no statistically significant relationship between the perceived effectiveness of AI technologies and reported fitness outcomes and activity levels among users.

2. Theoretical Framework

This study utilizes the Diffusion of Innovations Theory proposed by Everett Rogers in 1957, which offers a robust framework for understanding how new technologies, such as artificial intelligence (AI) in fitness and physical activity, are adopted and spread within a social system. The theory outlines the process through which innovations are communicated and accepted, focusing on the key factors that influence their diffusion over time. By applying this framework, the study aims to illuminate the dynamics surrounding the integration of AI-powered fitness solutions and their impact on individual exercise routines and overall fitness outcomes. According to Rogers (2003), the diffusion process is shaped by several critical elements: the perceived characteristics of the innovation (such as relative advantage, compatibility, complexity, trialability, and observability), the communication channels used to disseminate information, the nature of the social system in which the innovation is introduced, and the role of change agents who facilitate the adoption process (Greenhalgh et al., 2004). In the context of AI in fitness technology, these factors are instrumental in determining how effectively users can personalize and enhance their exercise routines through AI-powered wearables and smart devices.

The application of the Diffusion of Innovations Theory is evidenced in prior research on health and wellness technologies. For instance, Gagnon et al. (2012) explored the adoption of telehealth technologies using this framework, identifying key drivers of acceptance in healthcare settings. Similarly, Payne et al. (2015) investigated the diffusion of wearable activity trackers among fitness enthusiasts, illustrating the theory's relevance in examining user characteristics and the broader social context influencing technology adoption. These studies affirm the theory's utility in dissecting the intricate interplay between technological advancements and the social environments that foster or impede their acceptance.

In this study, the Diffusion of Innovations Theory serves as a lens to investigate the transformative effects of AI technology on fitness and physical activity. It allows for an exploration of the multifaceted nature of AI integration, considering its implications across various domains, including individual exercise practices, sports science, urban

planning, and public health initiatives. The emphasis on communication channels and social networks within the theory provides insights into how AI-driven fitness solutions can be effectively disseminated and embraced by diverse stakeholders, including fitness enthusiasts, health professionals, technology developers, and policymakers.

3. Methodology

This study employed a quantitative research approach to investigate the transformative impact of artificial intelligence (AI) technology on fitness and physical activity. The focus of this approach was to quantitatively assess how AI-powered wearables and smart fitness devices influence the personalization and effectiveness of individual exercise routines, as well as their overall effect on fitness outcomes and physical activity levels among users. A cross-sectional survey design was utilized to gather data from a diverse group of participants. Census sampling technique was used to ensure adequate representation. The target population is made up of 101 pre-service physical education students. Although the study's target population was 101 respondents, the researcher was only able to contact and get information from 90 of them, leaving 11-person discrepancy. This indicates that 89.11% of the target population has been reached, while the remaining 10.89% has not. This sample size was deemed sufficient to analyze potential differences and relationships among variables.

Data collection was conducted using closed-ended questionnaire designed to assess respondents' perceptions and experiences with AI-powered fitness technologies. The survey included several components, beginning with demographic information where participants provided basic details such as age, gender, level of education, and fitness experience (e.g., novice, intermediate, advanced). Following this, a series of Likert-scale items (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) were included to evaluate participants' perceptions of how AI technologies have impacted their exercise routines. Sample items included statements such as, "AI-powered devices have personalized my workout plans," and "I feel more motivated to exercise because of the feedback from my wearable." Additionally, further Likert-scale items assessed changes in fitness outcomes and overall physical activity levels due to AI integration, with items such as, "Since using AI technology, I have noticed an improvement in my fitness levels," and "My overall activity level has increased since I began using AI-powered devices." The survey was disseminated via online platforms, including social media channels and fitness forums, and participants were informed about the purpose of the study while giving consent to participate. Ethical considerations included ensuring confidentiality and the right to withdraw from the study at any time.

Data were analyzed using statistical software such as SPSS version 26. The analysis began with means and standard deviation to answer the research questions. The benchmark for interpreting the results of the five-point Likert scale as Boone and Boone (2012) stated; Strongly Disagree (1.00 - 1.80) represents a strong negative response or disagreement with the statement; Disagree (1.81 - 2.60) indicates a general negative response or disagreement, but with less intensity than "Strongly Disagree"; Neutral (2.61 - 3.40) reflects a neutral or undecided position, with neither strong agreement nor disagreement; Agree (3.41 - 4.20) shows a positive response or agreement with the statement; and Strongly Agree (4.21 - 5.00) denotes a strong positive response or high level of agreement. A standard deviation of less than (< 1.0 = homogeneousness; ≥ 1.0 = Heterogeneousness) of responses. T-tests, were employed to examine differences in perceptions and fitness outcomes across gender. Additionally, correlation analysis was performed to assess the relationships between perceived effectiveness of AI technologies and reported fitness outcomes and activity levels. The study received ethical approval prior to data collection. Informed consent was obtained from the participants, ensuring they understood their rights, the purpose of the study, and the measures taken to protect their data. Data privacy was strictly maintained, with all responses anonymized and securely stored. This quantitative methodology provided a structured approach to exploring the integration of AI in fitness and its impact on individual exercise routines and overall physical activity levels.

4. Results

Research question 1: What ways are AI-powered wearables and smart fitness devices transforming the personalization and effectiveness of individual exercise routines?

This analysis aims to provide insights into how participants perceive the role of AI technology in customizing and enhancing their workout experiences**.** Data from the survey were analyzed using means and standard deviations.

Table 1: Personalization and effectiveness of individual exercise routines through AI-powered wearables

Item	N	M	S.D
AI-powered devices provide workout recommendations that are tailored to my fitness level and goals.	90	3.32	0.31
My exercise routines have become more structured and effective since I started using AI-powered fitness devices.	90	4.51	0.21
AI technology helps me set realistic and personalized fitness goals.	90	4.37	0.33
I receive valuable feedback from AI-powered devices that help improve my exercise form and technique.	90	4.41	0.27
I rely on AI-powered devices to track and adjust my workout intensity based on my progress.	90	4.43	0.23
My workouts feel more enjoyable and engaging with AI-powered wearable guidance.	90	3.42	0.26
AI-powered devices have helped me diversify my exercise routines.	90	3.32	0.31
The personalized insights provided by AI technology have improved the overall quality of my workouts.	90	3.51	0.21
AI-powered devices adapt to my changing fitness needs over time, making them more relevant.	90	3.37	0.33
Mean of means/Standard deviation	**90**	**3.85**	**0.27**

Source: Field Data, 2024

The item with the highest mean score was “My exercise routines have become more structured and effective since I started using AI-powered fitness devices” (M = 4.51, S.D. = 0.21), suggesting strong agreement among participants that these devices significantly contribute to more organized and effective workouts. This high mean score, coupled with a low standard deviation, reflects a consensus that AI has a positive impact on the structuring of exercise routines. Moreover, participants expressed strong perceptions regarding AI's ability to assist in setting realistic fitness goals (M = 4.37, S.D. = 0.33) and providing valuable feedback on exercise form (M = 4.41, S.D. = 0.27). These results indicate that respondents feel that AI technologies enhance their ability to achieve personalized fitness objectives and improve their exercise technique, which is essential for injury prevention and maximizing performance. In contrast, the items measuring the personalization of workout recommendations and the diversification of exercise routines received lower mean scores (M = 3.32, S.D. = 0.31), suggesting that while participants acknowledge the usefulness of AI, there is still room for improvement in how these devices recommend new activities and adapt to users' evolving preferences. The overall mean of 3.85 indicates a generally positive perception of AI-powered wearables, reflecting that respondents recognize their value in personalizing fitness experiences. The standard deviation of 0.27 signifies a degree of homogeneity in responses, particularly for the higher-rated items, indicating that participants share similar views on the effectiveness of AI technologies in enhancing their exercise routines. This analysis highlights the transformative potential of AI in personalizing fitness, while also identifying areas where further development could enhance user experiences and engagement. This finding corroborates with Patton et al. (2016) which indicated that personalization in fitness routines is crucial for improving user engagement and adherence. AI technologies offer tailored recommendations based on individual fitness levels, preferences, and progress, allowing for more structured workouts. According to the Diffusion of Innovation Theory, the perceived advantages of AI technologies can lead to increased adoption and usage among users (Rogers, 2003). As individuals experience the benefits of personalized fitness experiences, they are more likely to incorporate these technologies into their routines, facilitating a positive feedback loop of engagement and effectiveness.

Research question 2: In what ways do AI technologies improve individual fitness outcomes and overall physical activity levels among users?

This analysis seeks to identify specific ways in which participants believe AI technology impacts their fitness progress and physical activity habits. The data analysis for this research question involved descriptive statistics.

Table 2: Effectiveness of AI technologies in improving individual fitness outcomes and overall physical activity

Item	N	M	S.D
AI technologies have increased my physical activity levels.	90	4.54	0.54
I am more consistent in my fitness routine due to the reminders and guidance from AI-powered devices.	90	4.34	0.67
AI-powered devices have helped me track and achieve my fitness goals effectively.	90	4.54	0.54
The feedback from AI devices has contributed to improvements in my physical performance.	90	4.51	0.38
My awareness of my physical health and fitness levels has increased through the use of AI technology.	90	4.32	0.35
AI technologies make it easier for me to monitor my progress and make adjustments as needed.	90	3.94	0.41
AI-powered devices provide me with useful information about my recovery needs and activity balance.	90	3.84	0.46
My health and wellness have improved as a direct result of using AI-powered fitness tools.	90	3.78	0.37
Mean of means/ standard deviation	**90**	**4.23**	**0.47**

Source: Field Data, 2024

The item "AI technologies have increased my physical activity levels" received a mean score of 4.54 (S.D. = 0.54), indicating a strong agreement among respondents about the positive impact of AI on their activity levels. This suggests that users feel empowered by AI to engage more frequently in physical activities. Similarly, the statement "AI-powered devices have helped me track and achieve my fitness goals effectively" matched this high mean score of 4.54 (S.D. = 0.54), reinforcing the notion that AI tools are instrumental in helping users attain their fitness objectives. Moreover, the feedback provided by AI devices appears to have a significant role in enhancing physical performance, as indicated by a mean score of 4.51 (S.D. = 0.38). This suggests that users find the real-time data and insights from these devices beneficial for improving their exercise routines. The item regarding consistency in fitness routines, "I am more consistent in my fitness routine due to the reminders and guidance from AI-powered devices," also received a favorable mean of 4.34 (S.D. = 0.67), highlighting that the reminders and support from AI contribute to regular exercise habits. Further analysis of the data shows that participants reported an increased awareness of their health and fitness levels through AI technology, with a mean score of 4.32 (S.D. = 0.35). However, some items yielded lower mean scores, indicating areas that may need improvement. For instance, the item "AI-powered devices provide me with useful information about my recovery needs and activity balance" scored a mean of 3.84 (S.D. = 0.46), and "My health and wellness have improved as a direct result of using AI-powered fitness tools" had a mean of 3.78 (S.D. = 0.37). These results suggest that while participants acknowledge the benefits of AI, they perceive that there is room for enhancement in the information regarding recovery and overall wellness. The overall mean score of 4.23 (S.D. = 0.47) across the assessed items reflects a generally positive perception of AI technologies among participants, with low standard deviations indicating a strong consensus in their responses. This analysis emphasizes the positive role that AI technologies play in enhancing users' fitness journeys and encourages further developments to maximize the effectiveness and comprehensiveness of AI-driven fitness tools. The findings suggest that users feel more motivated and accountable due to the continuous feedback and reminders provided by AI devices. This supports research by Jago et al. (2016), which highlighted that technology-mediated feedback enhances physical activity levels by fostering motivation and reinforcing behavior change. The Diffusion of Innovation Theory emphasizes that innovations perceived as beneficial in improving fitness outcomes are more likely to be adopted, as users recognize their value in achieving personal fitness goals (Rogers, 2003). Thus, the effective integration of AI in fitness technology may lead to sustained increases in physical activity levels, promoting healthier lifestyles.

Ho1: There are no statistically significant differences in perceptions of the effectiveness of AI technologies in fitness between male and female users.

To test this hypothesis independent samples t-tests were conducted to compare the mean scores of male and female participants regarding their perceptions of AI technologies in fitness. The result is presented in Table 3.

Table 3: Gender Differences in perceptions of the effectiveness of AI technologies in fitness

Sex	N	Mean	Std. Dev.	T	df	Sig-Value
Male	67	3.43	0.39	1.180	216	0.239
Female	23	3.41	0.42			

Source: Field Data, 2024

The analysis of gender differences in perceptions of the effectiveness of AI technologies in fitness, as illustrated in Table 3, reveals that male participants (N = 67) had a mean score of 3.43 (SD = 0.39), while female participants (N = 23) had a slightly lower mean score of 3.41 (SD = 0.42). The t-test conducted to compare these means resulted in a t-value of 1.180 with 216 degrees of freedom and a significance value (p-value) of 0.239. Given that the p-value exceeds the level of 0.05, the researcher fails to reject the null hypothesis (Ho1). This indicates that there are no statistically significant differences in perceptions of the effectiveness of AI technologies in fitness between male and female users. Thus, both genders appear to have a similar level of agreement regarding the effectiveness of AI technologies in enhancing their fitness experiences. This finding is noteworthy as it suggests a universal acceptance of AI technologies across genders, which is not always evident in technology adoption studies. Previous research has indicated varying attitudes towards technology based on gender, often highlighting that women may feel less comfortable using fitness technologies (Coffey et al., 2021). However, the absence of significant differences in this study suggests that AI technologies may be designed in a way that is inclusive and appealing to all users, regardless of gender. This could be linked to the Diffusion of Innovation Theory, which posits that the compatibility of innovations with existing values and experiences influences their adoption (Rogers, 2003). The neutrality in perceptions may suggest that AI-powered wearables are effectively addressing the needs of a diverse user base.

Ho2: There is no statistically significant relationship between the effectiveness of AI technologies and reported fitness outcomes and activity levels among users.

Peason's correlation analysis was conducted to examine the relationship between participants' perceived effectiveness of AI technologies and their reported fitness outcomes and activity levels. This analysis provides insights into whether users who perceive AI technologies as effective also report better fitness outcomes and higher levels of physical activity. The result of the relationship between effectiveness of AI technologies and fitness outcomes is presented in Table 5.

Table 5: Relationship between effectiveness of AI technologies and fitness outcomes

Variable	Mean	*Sd*	*R*	R^2	*P*
Effectiveness	4.23	.47	.784	.615	0.000
Fitness outcome	3.85	.27			

Source: Field Data, 2024

The mean score for the perceived effectiveness of AI technologies was 4.23 (SD = 0.47), indicating a generally high perception of effectiveness among participants. Conversely, the mean score for fitness outcomes was 3.85 (SD = 0.27), suggesting a favorable but slightly lower perception of actual fitness results. The correlation

coefficient (R) was found to be 0.784, indicating a strong positive relationship between the perceived effectiveness of AI technologies and reported fitness outcomes. The coefficient of determination (R^2) of 0.615 suggests that approximately 61.5% of the variance in fitness outcomes can be explained by the perceived effectiveness of AI technologies. This strong relationship implies that users who perceive AI technologies as effective are likely to report better fitness outcomes. The p-value for this correlation was 0.000, which is below the threshold of 0.05. This statistically significant result suggests the rejection of the null hypothesis (Ho2). This confirms that there is indeed a statistically significant relationship between the perceived effectiveness of AI technologies and reported fitness outcomes and activity levels among users. Users who viewed these technologies as effective reported better fitness results, supporting the notion that the perceived utility of an innovation directly influences its adoption and resulting outcomes (Rogers, 2003). This finding aligns with the work of Kwan et al. (2020), which demonstrated that user perceptions of technology's effectiveness are crucial predictors of its impact on behavior change and fitness achievements. In the context of the Diffusion of Innovation Theory, this relationship underscores the importance of enhancing user perceptions through effective marketing and user education, thereby increasing the likelihood of sustained use and positive health outcomes.

5. Findings

The analysis of the data reveals the following findings:

1. AI-powered wearables significantly enhance the personalization and effectiveness of individual exercise routines. Participants reported positive perceptions of how AI improves workout structure, aids in setting personalized fitness goals, and contributes to overall workout enhancement.
2. AI technologies are perceived to improve fitness outcomes and physical activity levels. Respondents indicated a strong belief that these technologies increase their physical activity and help maintain consistency in their fitness routines.
3. There is no statistically significant difference in perceptions of the effectiveness of AI technologies between male and female users. The analysis revealed no significant differences in perceptions between genders.
4. There is a statistically significant relationship between the perceived effectiveness of AI technologies and reported fitness outcomes. The analysis confirmed a strong positive relationship, indicating that higher perceptions of AI effectiveness are associated with better fitness outcomes.

6. Conclusion and Recommendations

The study highlights the significant role of AI-powered wearables and smart fitness devices in enhancing the personalization and effectiveness of exercise routines. Participants expressed strong positive perceptions regarding the impact of AI technologies on their workout experiences, goal-setting, and overall fitness outcomes. Additionally, the findings confirmed a strong positive relationship between users' perceptions of AI effectiveness and their reported fitness outcomes, emphasizing the potential of AI technologies to elevate physical activity levels. Notably, the analysis indicated that gender does not significantly influence perceptions of AI effectiveness, suggesting a universal appreciation for these technologies among users. The following recommendations are made:

1. Fitness organizations and AI technology developers should provide educational resources to help users understand the full capabilities and benefits of AI-powered devices. This could include workshops, tutorials, and user manuals that highlight personalized features and their impact on fitness goals.
2. To maximize the benefits of AI technologies, users should be encouraged to engage with their devices consistently. This includes utilizing features such as goal setting, feedback mechanisms, and tracking capabilities to enhance their fitness journey.
3. Fitness developers should prioritize user-friendly interfaces and ensure that AI technologies are easily accessible and intuitive for all users, regardless of their technical expertise. Continuous improvement of the user experience will facilitate greater adoption and satisfaction.

4. Combining AI technologies with personalized coaching or fitness programmes could enhance motivation and accountability. This could involve the integration of AI insights with professional guidance to tailor fitness plans to individual needs.

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Ethnoculture: Educational, Pedagogical, Ethnological and Intercultural Research Perspective

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Abstract
This article explores ethnoculture as a fundamental axis in educational, pedagogical, ethnological and intercultural research perspectives, highlighting its impact on the understanding and transformation of social and educational contexts. The relevance of integrating ethnoculture into teaching and learning processes, as well as into social and cultural research, is analyzed, promoting transdisciplinary approaches that address cultural diversity from an integrative and critical perspective. Among the main findings, emerging categories are identified that offer new ways of interpreting and addressing cultural and social interaction, highlighting its importance in shaping educational policies, identities and practices. These findings highlight the need to develop research that connects theory and practice, and that promotes a deep understanding of intercultural dynamics in an increasingly globalized world.

Keywords: Ethnoculture, Educational, Ethnological, Pedagogical, Intercultural

1. Introduction

Ethnoculture is defined as the set of values, traditions, practices, beliefs and ways of life that characterize a specific community, integrating cultural and ethnic aspects in a dynamic and relational framework. Its relevance in education, pedagogy and social research lies in its ability to enrich the understanding of cultural diversity, promoting more inclusive and intercultural teaching and learning processes. In a globalized context marked by cultural tensions, addressing ethnoculture from an educational perspective is essential to promote a more equitable, reflective and rooted society.

This article is justified by the need to analyze how ethnoculture can transform pedagogical practices and research processes, generating a positive impact on the construction of cultural and educational policies that respect diversity. In this sense, the objectives of the article are: to explore the relationship between ethnoculture and educational approaches, to analyze previous ethnological and intercultural research from a hermeneutic perspective, and to propose emerging categories that serve as transdisciplinary tools for educational practice and social research.

The methodological approach is based on hermeneutics applied to the analysis of previous ethnological studies, which allows for the interpretation and reinterpretation of cultural data and concepts from a critical and contextualized perspective. This approach facilitates the identification of emerging patterns and categories that connect ethnoculture with pedagogical practices and intercultural dynamics.

The results of the analysis are expected to highlight the importance of integrating ethnoculture into educational and research frameworks as a tool to strengthen cultural identities and improve understanding of social dynamics. In conclusion, it is hoped to propose a transdisciplinary and intercultural model that articulates theory and practice, contributing to the construction of a more inclusive education that is connected to the cultural realities of communities.

The research background of this work is based on previous studies that address ethnoculture from various disciplinary perspectives, with a particular focus on its application in education, pedagogy, ethnological and intercultural research. Three main lines of research are highlighted that have influenced the development of this work:

Research by Shirley Brice Heath (1983) and Brian Street (1993) has examined how cultural contexts influence teaching and learning processes, highlighting the importance of understanding local cultural practices in order to design effective pedagogical strategies. These studies have laid the groundwork for incorporating ethnographic approaches into education, linking students' cultural identities with their educational experiences.

Ethnology has provided a deep understanding of cultural traditions and practices at the community level. Researchers such as Clifford Geertz (1973) have emphasized cultural interpretation as a key to understanding social organization and shared meanings in diverse communities. In addition, cross-cultural research has highlighted how interactions between cultures generate dynamics of adaptation, resistance, and transformation, as Lee (1988) rightly points out.

Authors such as Pierre Bourdieu (2007; 2014) and his theory of cultural capital and ideology have explored how social and cultural structures affect access to and participation in education. Similarly, Paulo Freire (1970) has emphasized the pedagogy of the oppressed, a critical approach that connects educational practices with struggles for social justice and cultural recognition.

Locally, we find the antecedent of Trillos-Pacheco (2021) who examines the contribution of researcher Jairo Soto Molina in the field of ethnoculture. Soto Molina is interested in cultural theory to the extent that it allows us to explain the way of being, living and feeling the traditions and customs of the Latin American being. His approach highlights the importance of understanding the cultural particularities of Latin America in order to develop research that authentically reflects the identity and diversity of the region.

This background demonstrates the richness and diversity of approaches to ethnoculture and its relationship to education and research. This work is positioned within this academic tradition, using a hermeneutic approach to reinterpret previous findings and provide new categories that strengthen the integration of ethnoculture into educational and research frameworks.

2. Educational and pedagogical perspective of ethnography

Ethnography, as a qualitative research methodology, plays a central role in the study of educational contexts by offering tools to explore and understand the cultural, social and pedagogical dynamics that develop in school environments. This approach allows us to analyze how the cultural practices of students, teachers and communities influence teaching and learning processes, helping to build pedagogical strategies that are culturally relevant and effective. According to Geertz (1973), ethnography is based on "describing the cultural meanings deeply inscribed in human behaviors and practices" (p. 387), a premise that is key to addressing diversity in educational contexts. Ethnography in education allows for the observation and documentation of classroom interactions, the dynamics between teachers and students, and the cultural practices that underlie these processes. Heath (1983) showed in his seminal study of African-American and white communities in South Carolina how students' linguistic and cultural practices affected their classroom performance, concluding that cultural differences were a significant factor in academic success. This approach helps to avoid generalizations and stereotypes by offering a deep understanding of cultural and contextual particularities.

Ethnographic methods such as participant observation, open-ended interviews, and narrative analysis are essential tools for investigating how local cultures influence educational environments. Participant observation allows researchers to engage directly in the school context, documenting cultural interactions and practices in their natural setting (Spradley, 1980). Likewise, open-ended interviews allow for exploring students' and teachers' perspectives and experiences around cultural diversity in the classroom.

In intercultural pedagogy, these methods help to identify cultural and linguistic barriers that may limit student participation. For example, Moll, Amanti, Neff, & González, N.'s (2006) studies on "funds of knowledge" demonstrated that integrating families' cultural experiences and knowledge into the school curriculum could significantly improve the participation and achievement of students from culturally diverse communities.

Ethnography has demonstrated its ability to transform educational practices by generating a deeper understanding of students and their cultural contexts. For example, Dyson's (1997) study explored how African American children used oral storytelling and rap in their everyday interactions, leading to the design of pedagogical activities that leveraged these cultural practices to improve reading and writing skills.

Another example is the work of Paris (2012), who introduced the concept of pedagogies of cultural sustainability, emphasizing the importance of maintaining and valorizing students' cultural practices rather than assimilating them to a homogeneous standard. This perspective, based on ethnographic methods, has been particularly influential in educational settings with high cultural diversity.

Following the approach recently proposed in the article "Building a bilingual intercultural citizenship in a decolonial key" by Soto-Molina, Jairo E. (2023), the ethnographic perspective allows for the design of more inclusive and effective pedagogical strategies that transcend traditional models and promote teaching and learning that value and respect the multiple identities and knowledge present in educational communities. This approach, in line with a decolonial vision, is oriented towards the construction of a bilingual intercultural citizenship that not only recognizes linguistic and cultural diversity, but also encourages critical dialogue between cultures, fostering educational spaces that question hegemonic structures and contribute to the empowerment of communities in their own contexts.

Ethnography offers a powerful educational and pedagogical perspective to address the complexities of cultural diversity in school environments. By focusing on cultural practices and meanings, it allows for the design of more inclusive and effective pedagogical strategies, promoting teaching and learning that value and respect the multiple identities and knowledge present in educational communities.

2.1. Ethnological and intercultural research

Ethnological and intercultural research have established themselves as fundamental tools for the study of cultural and social dynamics in educational and community contexts. While ethnology focuses on the comparative analysis of cultures, identifying patterns, similarities and differences between them (Tylor, 1871), intercultural research prioritizes the study of interactions between cultures, exploring how they influence each other and generate new dynamics in contexts of cultural contact (Holliday, Hyde & Kullman, 2004). This distinction allows complex problems to be addressed from different perspectives, enriching the analysis of social and educational phenomena.

2.2. Definition and differences between ethnology and intercultural research

Ethnology, as a branch of anthropology, analyzes cultures in their entirety, seeking to understand social structures, belief systems, and cultural practices in a comparative way. Its focus is oriented towards the description of universal patterns or significant divergences between cultural groups, based on qualitative methodologies such as documentary analysis, participant observation, and in-depth interviews (Geertz, 1973). On the other hand, intercultural research focuses on the relationships and processes that arise when different cultures interact. This line of research examines issues such as culture shock, adaptation, intercultural learning, and the formation of hybrid identities (Byram, & Golubeva, 2020).

A key difference is that ethnology focuses on the retrospective analysis of cultures in their own contextual framework, while intercultural research addresses contemporary dynamics and projects scenarios for coexistence and mutual understanding between cultures.

A prominent example in the educational field is the work of Gonzalez and Moll (2002) on "funds of knowledge." This cross-cultural study examined how the cultural experiences and family practices of students from Latino communities in the United States could be integrated into the school curriculum, improving academic performance and promoting inclusion.

In the social field, research such as that of Hofstede (2011) has provided a theoretical framework for understanding cultural differences in work and education, defining dimensions such as power distance, individualism-collectivism and uncertainty avoidance. These studies have had a significant impact on the management of multicultural policies and the design of intercultural educational programs.

Another relevant example is the work of Kymlicka (1995), who explored cultural rights in multicultural contexts, highlighting the need for public policies that protect the cultural identities of minority groups, while promoting intercultural dialogue.

Ethnological and intercultural research has transformed the way in which cultural identity is understood and its relationship to public and educational policies. In the educational field, they have highlighted the importance of designing curricula that integrate cultural diversity, promoting respect for local identities and knowledge. This aligns with the concept of cultural sustainability pedagogy proposed by Paris (2012), who advocates for pedagogical practices that not only respect but also strengthen students' cultures.

In terms of cultural policies, intercultural studies have influenced the implementation of strategies that seek to balance the preservation of traditional cultures with the demands for integration in globalized societies. For example, the recognition of the linguistic and cultural rights of indigenous peoples in countries such as Bolivia and Ecuador reflects how this research can be translated into legislative and social advances.

In short, ethnological and intercultural research offers essential perspectives for addressing the complexities of cultural diversity in educational and social contexts. By providing tools for analyzing and understanding cultural identities and interactions, these investigations promote a more inclusive and enriching dialogue between cultures, contributing to the design of more equitable and diversity-respecting policies and practices.

2.3. Social and cultural research

Social and cultural research is a multidimensional field that allows exploring the dynamics of societies from interrelated perspectives, with a special focus on ethnoculture as a central axis for understanding the interaction between identity, culture and society. This type of research employs diverse methods and approaches, adapted to the complexities of social and cultural phenomena, and highlights the importance of transdisciplinarity to generate a holistic understanding (Soto-Molina, 2023).

The methods used in social research related to ethnoculture combine qualitative and quantitative techniques that allow us to capture both the structures and the subjectivities of the phenomena studied. Among the most common approaches are:

Ethnography:
This method, derived from anthropology, focuses on participant observation and in-depth interviews to capture cultural practices, beliefs and meanings within a community. According to Geertz (1973), ethnography seeks to interpret cultures from the point of view of social actors, providing a "thick description" that reveals the systems of meanings that guide their behaviors.
Narrative analysis:

Personal stories and collective narratives are powerful tools for understanding how communities construct and express their cultural identity. Duque, R. Lyle (2009) underlines that Riessman (2008) considers that narratives not only reflect experiences, but also shape them, offering insights into how people and groups face social and cultural challenges.

Documentary analysis:
In social research, the analysis of historical, legal, and literary documents allows for contextualizing and comparing cultural manifestations over time. This approach is especially useful in ethnocultural studies that seek to understand changes and continuities in cultural traditions and practices.

Participatory methods:
In line with Freire's (1970) approach to participatory action research, these methods involve communities in the design, development and evaluation of the research, ensuring that the results are relevant and applicable to their reality. This approach is fundamental in ethnocultural studies, as it respects and values local knowledge as a legitimate source of knowledge.

2.4. Importance of transdisciplinarity in cultural analysis

Transdisciplinarity has become a necessity in cultural analysis due to the inherent complexity of social phenomena. According to Nicolescu (2002), this approach seeks to integrate knowledge from various disciplines, transcending their boundaries to address common problems from multiple perspectives. In research on ethnoculture, transdisciplinarity allows combining approaches from anthropology, sociology, history, linguistics, and education, among other fields.

For example, a transdisciplinary study on the preservation of indigenous languages can integrate linguistic methods to document languages, anthropological approaches to understand associated cultural practices, and educational perspectives to design teaching strategies that promote their sustainability. This integration not only enriches the understanding of the phenomenon, but also generates practical and inclusive solutions.

Transdisciplinarity also facilitates the analysis of global and local phenomena in their interrelation. García Canclini (2000) highlights that the processes of cultural globalization require transdisciplinary approaches to understand how local cultures interact and adapt to global dynamics, generating new forms of expression and cultural resistance.

Social and cultural research, with its emphasis on qualitative methods and transdisciplinarity, is presented as an indispensable tool for the study of ethnoculture. By integrating diverse disciplines and methodologies, it allows us to address the complexities of cultural and social dynamics from a broad and deep perspective, fostering respect for cultural diversity and promoting solutions that are culturally relevant and sustainable.

2.5. Relationship between the philosophy of science and ethnocultural studies

Philosophy of science and ethnocultural studies converge in their interest in analyzing and reflecting on the epistemological and methodological foundations that guide the production of knowledge. While philosophy of science examines the principles and paradigms that underpin scientific practices (Popper, 1959; Kuhn, 1962), ethnocultural studies focus on understanding cultural and social dynamics from critical and contextual perspectives. This interrelation is crucial to problematize how traditional scientific approaches have addressed (or marginalized) cultural identities and local practices.

Philosophy of science also invites us to reflect on the biases inherent in scientific approaches. Do Sousa Santos (2010), in his proposal for an “epistemology of the south,” points out that traditional scientific knowledge has often delegitimized local and popular knowledge, classifying it as “non-scientific” or irrelevant. This critique highlights the need to reconfigure scientific paradigms to include perspectives that value the contributions of indigenous cultures, Afro-descendants, and other marginalized communities.

Furthermore, ethnocultural studies have questioned the universality of scientific knowledge by showing that many of the epistemological assumptions come from Eurocentric contexts. Dussel (1994) and Quijano (2000) have argued that modern science has been intrinsically linked to colonial processes that imposed a single vision of reality, marginalizing other forms of knowledge and cultural understanding.

In recent years, new paradigms have emerged that seek to overcome the limitations of traditional approaches. The transdisciplinarity paradigm (Nicolescu , 2002) advocates the integration of diverse disciplines and knowledge to address complex problems such as cultural phenomena. This approach allows combining scientific, humanistic and practical perspectives, promoting a dialogue between formal and informal knowledge.

On the other hand, the decolonial paradigm, promoted by authors such as Mignolo (2011) and Escobar (2017), poses a radical critique of Eurocentrism in the production of knowledge. This approach seeks to decenter hegemonic epistemologies and value local and community knowledge as legitimate sources of knowledge.

The relationship between the philosophy of science and ethnocultural studies is fundamental to rethinking how knowledge is produced and validated in diverse cultural contexts. Reflecting on scientific paradigms allows us to question the limitations of traditional approaches and open up space for more inclusive and critical methodologies. In this sense, ethnocultural studies, supported by alternative paradigms such as interpretivism, transdisciplinarity and decolonialism, contribute to a richer and more nuanced understanding of cultural and social dynamics in an increasingly globalized world.

2.6. Cultural and identity policies and their influence on research

Cultural and identity politics play a crucial role in guiding and impacting research related to ethnoculture, identity, and educational processes. These politics not only reflect the priorities of governments and institutions, but also directly influence how cultural identities are conceptualized and addressed in academic and educational settings. This analysis provides an understanding of how politics and identity dynamics interact with research and educational processes, shaping practices and outcomes in both fields.

Cultural policies establish the institutional and normative frameworks that regulate the production, preservation, and promotion of cultural expressions in a society. These policies affect the direction of research by prioritizing certain topics, communities, and approaches. For example, in Latin America, the cultural policies of progressive governments, such as in Bolivia and Ecuador, have promoted research on indigenous cultures and linguistic revitalization, as part of a broader effort to build plurinational states (Walsh, 2009).

However, these policies can also limit the diversity of approaches by favouring specific agendas. Do Sousa Santos (2010) criticises that many cultural policies, although well-intentioned, perpetuate power structures by relegating local knowledge to a secondary role compared to Western scientific knowledge. This imbalance can bias research and under-represent the experiences of certain cultural groups.

On the other hand, identity politics, which focuses on the affirmation and recognition of cultural, ethnic and gender identities, also shape research. These politics encourage the study of identity dynamics, from intersectionality proposed by Crenshaw (1989) to decolonial approaches that value the voices and perspectives of historically marginalized communities (Mignolo, 2011).

Cultural identity plays a fundamental role in educational processes, as it influences how students perceive and engage with their learning. Freire (1970) argued that education must recognize students' cultural and social realities to be truly transformative. This critical approach is reflected in the need to design curricula that integrate the cultural histories, practices, and values of communities.

A relevant example is the concept of “funds of knowledge” developed by González and Moll (2002), which highlights how students’ cultural and family experiences can serve as valuable resources in the classroom. This

approach not only strengthens learning, but also contributes to the affirmation of cultural identities in educational contexts.

Furthermore, the relationship between cultural identity and education is bidirectional. While identity influences learning, educational processes also shape cultural identities by exposing students to new perspectives and validating or invalidating their cultural experiences. In this regard, Paris (2012) introduces the idea of cultural sustainability pedagogies, which seek to preserve and strengthen cultural identities rather than assimilating them into a homogeneous model.

Cultural and identity politics have a significant impact on the way research is conducted and how cultural identities are addressed in educational contexts. These policies can be powerful tools to promote inclusion and recognition of cultural diversity, but they must also be carefully managed to avoid reproducing unequal power dynamics. The relationship between cultural identity and education, meanwhile, highlights the importance of a pedagogical approach that values and respects students' identities, promoting an education that is not only inclusive but also transformative. Research in this field is essential to building more just and equitable societies, where cultural diversity is recognized as a strength and not a barrier.

Social and cultural theory has evolved significantly in its relationship with ethnocultural studies, broadening theoretical and methodological frameworks to analyse the dynamics of cultures in diverse social contexts. This development has been driven by interdisciplinary debates integrating sociology, anthropology, philosophy and cultural studies, generating new perspectives on how identities, cultural practices and social structures interact and are transformed.

From its beginnings, social theory has been interested in the relationships between individuals and social structures, but its focus on specific cultures and their internal dynamics was limited for much of the 19th century. Early approaches, such as those of Auguste Comte and Émile Durkheim, privileged the analysis of general social structures, relegating cultural aspects to a secondary level (Durkheim, 1912). However, with the advance of anthropology and ethnology, social theory began to integrate the cultural dimension into its analyses.

From the 20th century onwards, the focus on specific cultures gained prominence thanks to authors such as Clifford Geertz (1973), who proposed the idea of "thick description" to interpret cultural meanings in their specific contexts. This approach marked a shift towards understanding cultures as symbolic systems that mediate social interactions. In the following decades, social theory incorporated critical perspectives that questioned power structures and cultural homogenization. Decolonial studies, led by authors such as Aníbal Quijano (2000) and Walter Mignolo (2011), highlighted how Eurocentric narratives had shaped traditional social theories, ignoring or marginalizing the experiences and epistemologies of non-Western cultures. This approach fostered a broader dialogue on the intersections between culture, power, and identity.

One of the most influential contributions to the relationship between social theory and ethnocultural studies comes from Bourdieu (1986), who introduced the concept of cultural capital to analyze how cultural practices and values influence the reproduction of social inequalities. According to Bourdieu, cultural capital manifests itself in the form of knowledge, skills and dispositions that are linked to social position and often favor dominant groups. This theoretical framework has been fundamental in analyzing how local cultures interact with power structures and how social hierarchies are perpetuated in educational and cultural contexts.

Hall (1997), a key figure in cultural studies, explored how cultural identities are constructed and negotiated in contexts of social change and globalization. His work on representation and culture highlighted the importance of media in constructing identities and perpetuating cultural stereotypes. In addition, Hall introduced the notion of "identity as a process" rather than a fixed state, underlining its fluid and relational nature.

Giddens's (1984) structuration theory addressed the relationship between social structures and individual agency, proposing that cultural practices are not only conditioned by existing structures but also transform them. This

approach has been valuable for ethnocultural studies, as it allows for analysis of how local communities negotiate their identities and cultural practices within broader social contexts.

Butler (1990) introduced the idea that cultural and gender identities are not inherent, but rather constructed through performative practices. This concept has enriched ethnocultural studies by highlighting how cultural expressions are dynamic acts that challenge social norms and generate new possibilities for identification.

Social and cultural theory has evolved to integrate critical and contextual perspectives that enrich the analysis of ethnocultural studies. From Bourdieu's structural contributions to Butler's notions of performativity, these developments have broadened our understanding of how cultures operate in complex social contexts. In an increasingly globalized world, these theories offer essential tools for analyzing and valuing cultural diversity, questioning power dynamics and promoting greater social and cultural equity.

Social research finds in social theory a fundamental framework for understanding and analyzing cultural, social, and educational dynamics in diverse and intercultural contexts. The links between both disciplines allow not only the interpretation of complex phenomena, but also the proposal of more inclusive and critical research practices that respond to the realities of multicultural communities. This approach, when integrated with educational studies, offers theoretical and methodological tools to promote a more equitable, reflective, and transformative education. Social theory provides a conceptual framework that guides research in cross-cultural contexts by highlighting the interactions between social structures, cultural dynamics, and individual and collective identities. For example, Pierre Bourdieu's (1986) concept of the "social field" allows for analysis of how educational institutions, as part of a broader field, reproduce or transform social inequalities through the transmission of cultural capital. This approach is particularly valuable in research that addresses the experiences of cultural minority students in educational systems dominated by hegemonic values.

Similarly, Anthony Giddens' (1984) structuration theory provides a dynamic view that emphasizes the bidirectional relationship between social structures and individual agency. In intercultural contexts, this theoretical framework allows us to explore how local communities negotiate their identity and cultural practices in the face of global influences, and how these negotiations impact educational processes. For example, research on migration and cultural identity has used this approach to analyze how migrant students reconfigure their cultural identities within the classroom (Portes & Rumbaut, 2001).

In globalizing contexts, critical perspectives, such as those of Stuart Hall's (1997) cultural studies, enrich research practices by addressing how cultural discourses and representations shape intercultural interactions. These theories allow researchers to question dominant narratives that perpetuate inequalities and propose analytical frameworks that value cultural diversity as a resource rather than a challenge.

3. Methodological design of ethnocultural research

The methodological design of ethnocultural research involves the application of interdisciplinary approaches that combine qualitative and quantitative methods to explore cultural, social, and educational dynamics in diverse contexts. This type of research seeks to understand how cultural practices influence social structures and how these interact with educational, political, and community processes. The richness of ethnocultural research lies in its ability to capture the complexities of cultures through theoretical and methodological frameworks that prioritize the context, experiences, and voices of the communities studied (soto-Molina, 2023).

3.1. Approaches and paradigms in ethnocultural research

Methodological design in this field is often based on interpretive and critical paradigms that emphasize the importance of understanding cultures from their own frameworks of meaning. Clifford Geertz (1973), with his concept of "thick description," emphasized that cultural research must interpret the symbolic meanings that communities attribute to their practices and beliefs. This approach is complemented by critical paradigms, such as

that proposed by Paulo Freire (1970), which links research with social transformation, advocating a methodology that empowers communities and questions power structures.

In contemporary ethnocultural research, decolonial approaches (Mignolo, 2011) have also been integrated, challenging Eurocentric epistemologies by promoting methods that value the knowledge and practices of non-Western cultures. This paradigm advocates for an "epistemology of the South" (Santos, 2010) that prioritizes local and community narratives as legitimate sources of knowledge.

3.2. Research methods and techniques

The methods used in ethnocultural research are usually qualitative, as they allow for a deep exploration of cultural dynamics. The most common techniques include:

1. Participant observation:
   This technique, derived from anthropology, allows researchers to engage directly in the cultural context studied, documenting practices, interactions and meanings from an insider's perspective (Spradley, 1980). Participant observation is essential to capture the experiential dimension of cultures and build a contextualized understanding.
2. Open interviews and narratives
   Open interviews allow us to gather the perspectives and experiences of community members on their own terms. Riessman (2008) highlights the usefulness of narrative analysis in cultural research, as narratives offer insights into how people construct and transmit cultural meanings.
3. Documentary analysis:
   The study of historical documents, legal texts and other cultural records is a key tool for contextualizing ethnocultural research. This method allows us to analyze how cultural representations have evolved over time and how they relate to current dynamics.
4. Participatory methods:
   Inspired by Freire's participatory action research, these methods involve communities at all stages of the research process. This ensures that the findings are relevant and useful to the communities, and that the research contributes to their empowerment and development.
5. Digital visual and ethnographic methods:
   With the advancement of technologies, ethnocultural research has incorporated tools such as the analysis of images, videos and digital media to study cultural practices in physical and virtual spaces (Pink, 2013).

The methodological design of ethnocultural research should take into account ethical considerations that respect and protect the cultures and communities studied. Research ethics require researchers to obtain informed consent, avoid exploitation of communities, and ensure that results are accessible and beneficial to participants. Furthermore, ethnocultural research should be sensitive to power dynamics, ensuring that communities' voices are central and that researchers act as facilitators rather than imposing external interpretations.

The methodological design of ethnocultural research combines theoretical approaches and practical techniques that allow exploring the complexities of cultures in their specific contexts. By integrating interpretive, critical and decolonial paradigms, and by employing qualitative and participatory methods, these investigations promote a deep understanding of cultural and social dynamics, contributing to respect, inclusion and empowerment of communities. This approach not only enriches academic research, but also strengthens educational and political practices, fostering a more equitable and culturally aware society.

3.3. Findings of emerging categories in transdisciplinary and intercultural studies

Transdisciplinary and intercultural research has emerged as a crucial approach to addressing the complex challenges of the contemporary world, where cultural and social dynamics interact in a multidimensional way. This type of research allows for the integration of perspectives from diverse disciplines and cultural traditions, generating analytical categories that transcend conventional epistemological boundaries. Recent findings in this

field have identified key categories that not only enrich academic understanding, but also have significant implications in educational and social spheres.

1. Cultural hybridization:
   Cultural hybridization, as an analytical category, describes how cultures interact and transform each other in contexts of globalization and migration. García Canclini (2004) highlights that this process does not involve a simple mixture, but the creation of new cultural forms that combine local and global elements. Recent research has analyzed hybridization in educational contexts, such as the incorporation of traditional pedagogical practices into modernized curricula, generating approaches that respect local identities while responding to global demands.
2. Critical Interculturality:
   Critical interculturality goes beyond peaceful coexistence between cultures, focusing on the need to confront and transform power relations that perpetuate inequalities. Walsh (2009) points out that this category implies a dialogue that recognizes and values subaltern epistemologies, promoting a horizontal exchange of knowledge. This approach has been central to educational research that seeks to decolonize curricula, integrating indigenous and local knowledge into formal learning.
3. Epistemologies of the South:
   Santos (2010) introduces this category to challenge the Eurocentric narratives that dominate the production of knowledge, proposing an approach that prioritizes the knowledge and practices of the global south. In the educational field, the epistemologies of the south have inspired initiatives that rescue oral traditions, agroecological knowledge and spiritual practices as legitimate sources of learning.
4. Transnational identities:
   Transnational identities emerge as a result of cultural and social connections that transcend national borders. Portes and Rumbaut (2001) analyze how migrants and their descendants construct identities that combine elements of their cultures of origin and those of the receiving countries. This category has been used in studies on bilingual and multicultural education, highlighting the importance of validating the experiences and perspectives of migrant students in the classroom.
5. Cultural sustainability:
   Paris (2012) proposes this category to describe pedagogical approaches that not only respect local cultures, but also seek to preserve and revitalize them. In educational research, cultural sustainability has been used to design programs that integrate local languages and traditions, strengthening students' self-esteem and sense of belonging.

3.4. Educational and social implications of these categories

The findings related to these emerging categories have profound implications for educational practice and social policy-making:

1. In education:
   - More inclusive curricula: The categories of cultural hybridity and critical interculturality encourage the creation of curricula that integrate local and global knowledge, promoting an education that respects and values cultural diversity. For example, programs in Bolivia and Ecuador have incorporated indigenous knowledge into science subjects, promoting intercultural dialogue in the classroom (Walsh, 2009).
   - Teacher Education: Including Southern epistemologies and cultural sustainability in teacher education helps prepare teachers to work in multicultural environments, fostering pedagogies that strengthen students' cultural identities.
   - Bilingual and multicultural education: Research on transnational identities has inspired the implementation of bilingual programs that validate students' native languages while developing competencies in global languages such as English (Portes & Rumbaut , 2001).
2. In the social sphere:
   - Inclusive public policies: Emerging categories have been fundamental to the design of public policies that recognize and protect cultural identities, especially in contexts of migration and ethnic diversity. These policies range from the creation of spaces for intercultural dialogue to the implementation of strategies for linguistic revitalization.

- Community empowerment: Valuing southern epistemologies and cultural sustainability strengthens local communities, promoting their autonomy and ability to face global challenges. This is evident in community development projects that integrate traditional knowledge into environmental sustainability strategies.
- Reducing inequalities: By confronting power relations through critical interculturality, these categories contribute to reducing social and cultural inequalities, promoting a more equitable society.

Emerging categories in transdisciplinary and intercultural studies offer a rich analytical framework to address the complexities of cultural and social dynamics in the contemporary world. These categories not only enrich academic analysis, but also have significant practical implications in education and public policy. By integrating concepts such as critical interculturality, southern epistemologies, and cultural sustainability, research in this field contributes to building a more inclusive, equitable, and culturally diverse society. This approach highlights the importance of continuing to develop transdisciplinary research that connects theory and practice, promoting a genuine dialogue between cultures and knowledge.

3.5. Proposals for applying social theory to educational studies

Social theory not only offers tools for interpreting cultural and social phenomena, but also inspires practical proposals for transforming educational systems into more inclusive environments. Some key proposals include:

1. Designing inclusive curricula based on cultural capital:
   Following Bourdieu's (1986) concept, educational curricula can incorporate the "funds of knowledge" (González & Moll, 2002) of local communities, integrating cultural practices and community knowledge into teaching and learning activities. This not only fosters inclusion, but also strengthens students' self-esteem and sense of belonging.
2. Critical pedagogies and cultural sustainability:
   Paulo Freire (1970) and Paris (2012) have put forward pedagogical approaches that acknowledge the cultural and social realities of students, promoting education that is both critical and sustainable. Critical pedagogy invites students to reflect on the power structures that influence their lives and to act to transform them, while cultural sustainability ensures that educational practices not only respect but also preserve cultural identities.
3. Participatory action research:
   Inspired by Freire's theories, this methodology integrates social theory with educational practice by involving communities in the research process. This approach allows researchers and participants to work together to identify problems and develop solutions that are culturally relevant and sustainable.
4. Integrating decolonial theory into educational studies:
   Decolonial approaches by authors such as Walter Mignolo (2011) suggest rethinking hegemonic narratives in educational systems, incorporating knowledge and epistemologies from the global south. In practice, this involves designing educational programs that value indigenous and local knowledge as part of the formal curriculum.
5. Critical analysis of educational policies:
   Using frameworks such as Nancy Fraser's (2008) on social justice, researchers can analyze how educational policies impact intercultural communities, identifying areas of exclusion and proposing alternatives that promote equity and cultural recognition.

The integration of social theory into research and educational practices in intercultural contexts offers a rich approach to understanding and transforming cultural and social dynamics. By applying concepts such as cultural capital, structuration, and critical pedagogies, it is possible to design research and educational strategies that respond to the needs of diverse communities, promoting inclusion, respect, and cultural sustainability. In this sense, social theory not only provides analytical tools, but also drives transformative practices that contribute to a more just and equitable education.

3.6. Case studies

Case studies are a key methodology in qualitative research, allowing for in-depth and contextualized analysis of social, cultural and educational phenomena. In the field of education, ethnology and interculturality, case studies offer the opportunity to explore how theoretical concepts materialize in specific contexts, providing valuable insights into the cultural and social dynamics that influence educational processes.

3.6.1. Concrete examples of research that integrate education, ethnology and interculturality

1. Case 1: Integrating Wayuu Culture into Basic Education in La Guajira, Colombia
   Research by Ortiz and Guzmán (2018) explored how educational practices in Wayuu communities incorporated indigenous cultural elements to enhance student engagement. This study highlighted the importance of integrating the native language, Wayuunaiki , and oral traditions into the school curriculum. Results showed that these practices strengthened students' sense of cultural identity and improved their levels of academic engagement, demonstrating that intercultural education can be a powerful tool to combat educational lag in indigenous communities.
2. Case 2: Language revitalization projects in rural schools in Mexico
   In a study of Zapotec communities in Oaxaca, Pérez (2019) documented the impact of an educational program that used traditional songs and narratives to teach Zapotec language in primary schools. The research showed that these activities not only promoted language preservation, but also fostered more meaningful learning by connecting the school curriculum to students' cultural experiences.
3. Case 3: Building a bilingual intercultural citizenship
   In the study *"Building a bilingual intercultural citizenship in a decolonial key,"* Soto-Molina (2023) analyzed how an intercultural and bilingual pedagogical approach could promote the construction of critical citizenship in high school students in the Colombian Caribbean. This case focused on a school in Barranquilla where a Spanish-English bilingual curriculum was implemented that incorporated elements of coastal culture, such as music, festivities, and traditional orality.
   The author highlighted how activities based on vallenato music and the traditions of the Barranquilla Carnival helped students reflect on their cultural identities while developing English language skills. The study concluded that this approach not only improved students' academic performance, but also strengthened their sense of belonging and cultural pride, while promoting a critical view of globalization and its cultural impacts.

3.6.2. Critical analysis of the selected studies

The analysis of these cases highlights both the achievements and the challenges of integrating education, ethnology and interculturality:

1. Successes and contributions:
   - Cultural enrichment: All three cases demonstrated that integrating cultural practices into the curriculum strengthens students' identities and promotes more meaningful learning.
   - Pedagogical innovation: The use of local narratives, music and traditions proved to be an effective pedagogical tool, connecting formal learning with students' cultural experiences.
   - Promoting interculturality: These investigations promoted an intercultural dialogue by incorporating local knowledge into a broader educational framework, challenging hegemonic narratives and fostering respect for cultural diversity.
2. Challenges identified:
   - Lack of resources: In many cases, schools faced difficulties in implementing these programmes due to a lack of adequate educational materials and insufficient training of teachers in intercultural approaches.
   - Institutional resistance: Some programs faced resistance from educational authorities and parents, who felt that the intercultural approach could divert attention from traditional academic content. (Soto-Molina, 2019).

- Sustainability: The continuity of these programs often depended on external projects or specific researchers, putting their long-term sustainability at risk.

3. Contributions of the Soto-Molina study
   This case is particularly relevant for its decolonial approach, which questions power structures in education and promotes critical intercultural citizenship. Its innovative methodology, which combines local cultural practices with English language teaching, offers a replicable model for other multicultural regions. However, the study also highlights the need for public policies that support and strengthen these types of initiatives, ensuring their sustainability and expansion.

The case studies analysed demonstrate the transformative potential of research that integrates education, ethnology and interculturality. By connecting formal learning with cultural identities, these initiatives not only improve academic outcomes, but also strengthen the social fabric and promote a deeper respect for diversity. However, it is essential to address the challenges identified through inclusive educational policies and strengthening teacher capacities, ensuring that these practices become a sustainable component of educational systems. The case of Soto-Molina and Parra Fandiño represents an inspiring example of how these research can contribute to a more equitable and culturally relevant education.

4. Discussion

The article strongly highlights the importance of integrating ethnoculture into teaching, learning and social research processes, proposing a transdisciplinary approach that allows us to transcend traditional boundaries between disciplines in order to address cultural diversity in a comprehensive and critical manner. In this sense, it is evident that the incorporation of ethnographic, ethnological and intercultural perspectives not only enriches the understanding of cultural practices and meanings but also favors the development of policies and curricula that respect and strengthen local identities.

One of the central aspects discussed is the need to articulate theory and practice through methodologies that allow researchers and teachers to situate themselves in real and dynamic contexts. The use of participant observation, open interviews and narrative analysis have proven to be effective tools for capturing the complexity of cultural interactions in educational environments. These techniques facilitate the dense description of local realities, as proposed by Geertz, and enable the design of pedagogical strategies that adapt to the “funds of knowledge” of each community, which translates into a more inclusive and meaningful education (Soto-Molina, 2023).

The discussion also emphasizes the relevance of adopting critical and decolonial theoretical frameworks that question the hegemony of traditional Eurocentric approaches. Authors such as Paulo Freire, Bourdieu, and Mignolo provide solid arguments for rethinking the role of education in the construction and transformation of cultural identities. The application of concepts such as cultural hybridity, critical interculturality , southern epistemologies , and cultural sustainability provides an analytical framework that not only diagnoses existing inequalities but also proposes paths for the emancipation and empowerment of communities.

Transdisciplinarity is a fundamental pillar, since it integrates diverse perspectives and methodologies that allow a holistic approach to cultural phenomena in globalized and locally specific contexts. This approach is essential in a world in which mobility, migration and globalization processes generate new forms of identity and cultural resistance. However, the article also points out important challenges: institutional resistance, lack of resources and the need for sustained support through public policies that promote and maintain these initiatives over time.

The case studies presented, such as the integration of Wayuu culture in basic education, language revitalization projects in Zapotec communities, and the construction of a bilingual intercultural citizenship, exemplify how the application of these theoretical and methodological frameworks has the potential to transform educational practices and strengthen the social fabric. These cases also show the duality between the achievements and the difficulties in implementation, highlighting the urgent need to coordinate efforts between researchers, teachers, communities, and government entities.

5. Conclusions

1. Integration of ethnoculture in education:
   The study reaffirms that ethnoculture constitutes a strategic axis for the design of inclusive and pedagogically relevant curricula. By recognizing and valuing the knowledge and traditions of each community, the cultural identity of students is strengthened and their active participation in the educational process is encouraged. This is especially relevant in multicultural contexts, where diversity must be understood as a strength and a pedagogical resource.
2. Contribution of transdisciplinary methodologies:
   The combination of qualitative methods, such as ethnography, narrative analysis and participatory approaches, allows for a more precise and contextualized approach to cultural dynamics. These methods facilitate the identification of emerging categories (cultural hybridity, critical interculturality, epistemologies of the South, transnational identities and cultural sustainability) which, in turn, offer analytical and practical tools to rethink education in a globalized world. The integration of social and decolonial theory with educational practice reveals itself as a path towards the transformation of power structures and the reduction of inequalities.
3. Implications for educational policy and community empowerment:
   The experiences and case studies illustrated in the article demonstrate that, for intercultural initiatives to be sustainable, institutional support and the formulation of public policies that encourage teacher training in intercultural approaches, the inclusion of local knowledge and the active participation of communities in decision-making are necessary. Education, understood from a critical and culturally sustainable perspective, is presented as an essential instrument for the construction of more just and equitable societies, in which cultural diversity is recognized and valued as an integral part of the learning process and social development.

In summary, the discussion and conclusions presented in this article underline that ethnoculture is not only an object of study, but a transformative agent in education and social research. The integration of transdisciplinary perspectives and critical methodologies allows for a holistic approach to cultural diversity, offering concrete paths for the construction of curricula, pedagogical practices and public policies that respect and enhance cultural identities. Moving forward in this direction implies a commitment to social justice and the recognition of the plurality of knowledge, which is essential to respond to the challenges of a globalized and culturally diverse society.

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The Role of Educational Institution Administrators in Internal Educational Quality Assurance of Private Schools Nonthaburi Province

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Abstract
This research aimed to 1) study the level of academic administration roles of private school administrators, 2) study the level of quality assurance effectiveness, and 3) study the role of academic administration roles of school administrators that affect quality assurance. The sample group was 277 teachers in private schools under the Nonthaburi Provincial Education Office. Data were collected using a questionnaire on the role of academic administration in school administrators, with a reliability of 0.96. Data were analyzed using descriptive statistics, t-tests, and one-way ANOVA. The results of the study found that: 1) The role of school administration on educational quality assurance of school administrators overall and each aspect were at a high level, with the aspects with the highest mean value being development of innovative media and educational technology, Measurement, evaluation, and transfer of learning outcomes, and Promotion of community academic knowledge. When studying the level of effectiveness of quality assurance, the result was that the development of quality assurance systems, administrators providing advice, academic consultation, and taking care of education to the full potential and full time, and administrators promoting and developing the potential of personnel to be ready for decentralization. And the role of educational institution administrators that affect quality assurance analyzed in 9 aspects, it was found out that there were 4 aspects that could significantly predict the role of educational institution administrators that affect quality assurance at a statistical significance of.05, namely, the variables with the best predictive power were development of learning process, research for developing educational quality, educational supervision, and development of internal quality assurance system. These four variables can jointly predict the administrative role of academic administrators that affects quality assurance by 87.4 percent.

Keywords: Role of Administrators, Educational Quality Assurance Operations, Private School

1. Introduction

The Constitution of the Kingdom of Thailand, B.E. 2550 (2007), Section 43, stipulates that the state must ensure education is accessible and of high quality. Consequently, the National Education Act, B.E. 2542 (1999), and its subsequent amendments (Second Amendment, B.E. 2545 (2002), and Third Amendment, B.E. 2553 (2010)), were aligned under Chapter 6, which addresses educational standards and quality assurance from Sections 47 to 51. These provisions outline the principles and guidelines for implementing educational quality assurance. Section 48 specifically mandates that supervisory agencies and educational institutions establish internal quality

assurance systems within their schools and integrate quality assurance as a core component of institutional management. Educational quality assurance thus serves as a vital mechanism for improving educational standards. Every school is required to implement quality assurance systems to enhance the quality and standards of education across all levels. This involves two key components: internal quality assurance systems and external quality assurance systems. Based on the data from private schools in Nonthaburi Province, 56 schools achieved a good level in the third-round evaluation by ONESQA (Office for National Education Standards and Quality Assessment), accounting for 25.45% (Office of the Private Education Commission, 2015: 6).

Regarding the internal quality assurance of private schools in Nonthaburi Province for the academic years 2020 and 2021, the evaluation revealed that the overall quality assurance performance across the three educational standards was at an excellent level. The assessment of each standard indicated the following:
1. Standard 1: Learner Quality was rated as good.
2. Standard 2: Administrative Processes and Management of School Administrators were rated as excellent.
3. Standard 3: Learner-Centered Instructional Processes were also rated as excellent.

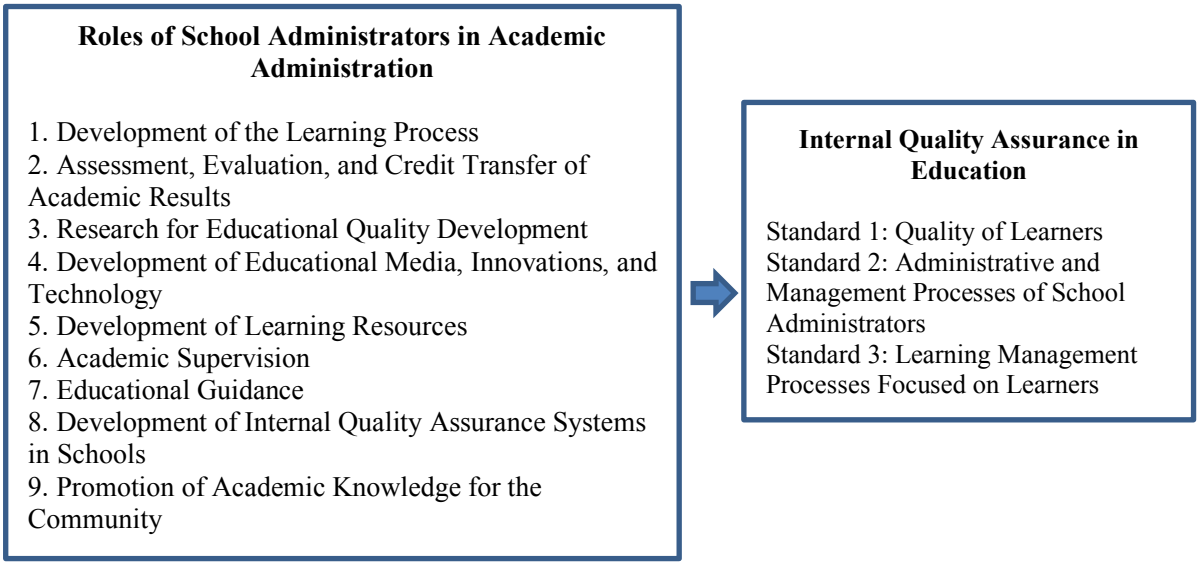
The COVID-19 pandemic has caused numerous challenges and obstacles in education. Online learning has replaced traditional classroom instruction and has become a vital component of modern education. However, certain subjects still require in-person learning due to limitations in facilities and equipment. Moreover, communication and collaborative activities among students play a crucial role in enhancing learning and developing various skills. Therefore, online learning cannot fully address all educational needs. However, having students return to full-time in-person classes amid the ongoing crisis does not seem to be an ideal solution. Practical subjects in various courses often cannot be fully covered through online learning. This leads to a lack of student engagement with online course content and unfamiliarity with internet-based teaching methods. Consequently, online learning has not achieved the desired level of success. In terms of organizing teaching activities, students are not actively engaged in the activities of courses that are conducted online. As a result, online teaching fails to meet the needs of the teachers. School administrators play a crucial role in the management of the institution. They must be leaders, coordinators, and conduct close monitoring. Although Thailand has implemented quality assurance in education, challenges remain in the execution of various tasks. These include a lack of coordination, insufficient support from school administrators, and a lack of understanding and cooperation from teachers and educational staff regarding the quality assurance process.

From the aforementioned problems and significance, it is evident that educational institutions need to ensure the quality and meet educational standards. Management is therefore a crucial component in the development of these institutions. This motivates the researcher to study the role of school administrators in ensuring internal quality assurance in private secondary schools in Nonthaburi province. The findings of this research can be used as information to plan and elevate the roles of school administrators in four academic areas to improve the quality of education. This will enable schools to be managed effectively, enhance the efficiency of internal quality assurance, and ensure the support and promotion of internal quality assurance according to the standards of basic education.

2. Objectives of the Research

1. To study the level of academic management roles of school administrators in private schools in Nonthaburi province.
2. To study the level of academic management by school administrators in private schools in Nonthaburi province.
3. To study the academic management roles of school administrators that impact internal quality assurance in private schools in Nonthaburi province.
4. To explore the strategies for developing the academic management roles of school administrators in private schools in Nonthaburi province.

3. Conceptual Framework of the Research



4. Research Methodology

4.1. Sample Population

The sample population consisted of secondary school teachers from private schools in Nonthaburi Province under the jurisdiction of the Nonthaburi Provincial Education Office during the academic year **2022.** The population included **26** schools with a total of **999** teachers (Nonthaburi Provincial Education Office, **2022).** The sample size was determined using the semi-automatic G*POWER program (Nipitpholt Sanitlou, Watchareeporn Sattaphet, Yada Napaararak, **2019)**, resulting in a required sample of **277** participants. The sampling process utilized stratified random sampling, ensuring proportional representation of schools from each district, followed by simple random sampling to select participants within each stratum.

4.2. Research Instruments

The research instruments utilized in this study included: **1.** A questionnaire assessing the roles of school administrators in internal quality assurance for private secondary schools in Nonthaburi Province. **2.** Recommendations regarding the roles of school administrators in internal quality assurance for private secondary schools in Nonthaburi Province. **3.** An interview guide focusing on the roles of school administrators in internal quality assurance for private secondary schools in Nonthaburi Province.

4.3. Data Collection Procedures

1. The researcher requested an official letter from the Dean of the Faculty of Liberal Arts addressed to the directors of private secondary schools in Nonthaburi Province. This letter sought permission to collect data for research purposes.
2. Letters requesting permission for data collection, along with questionnaires, were sent to the selected private secondary schools in Nonthaburi Province. These schools were randomly selected to ensure adequate representation. The researcher provided clear explanations regarding the purpose of the research, as well as detailed instructions for completing the questionnaire. A specific deadline for returning the completed questionnaires was also provided.
3. Upon receiving the completed questionnaires, the researcher carefully reviewed and verified their completeness and accuracy. Only fully completed questionnaires, accounting for 100% of the responses, were included in the data set for statistical analysis.

4.4. Data Analysis

The statistical methods used for data analysis included:

- Calculating the mean and standard deviation.
- Performing a dependent t-test (as per Boontham Kitpreedabrisut, **2000).**
- Analyzing Pearson Product Moment Correlation Coefficient (as per Prasit Suwanraksa, **2012: 314).**
- Conducting Multiple Linear Regression analysis (Multiple Linear Regression Model).

5. Research Findings

Part 1 **:** Results of the Analysis of School Management Roles in Internal Quality Assurance Based on Teachers' Opinions from Private Secondary Schools in Nonthaburi Province

Table 1: Mean and Standard Deviation of the School Management Roles in Internal Quality Assurance of Administrators.

The Role of School Administration in Internal Quality Assurance by Administrators	Level of Opinions			
	$\bar{X}$	**S.D.**	Level	Rank
1. Aspect of Learning Process Development (Y_1)	3.63	0.82	High	6
2. Aspect of Assessment, Evaluation, and Credit Transfer of Learning Outcomes (Y_2)	3.67	0.84	High	2
3. Aspect of Research for Educational Quality Development (Y_3)	3.59	0.89	High	9
4. Aspect of Development of Educational Media, Innovations, and Technology (Y_4)	3.63	0.86	High	1
5. Aspect of Development of Learning Resources (Y_5)	3.61	0.86	High	7
6. Aspect of Educational Supervision (Y_6)	3.64	0.87	High	5
7. Aspect of Educational Guidance (Y_7)	3.61	0.86	High	7
8. Aspect of Developing the Internal Quality Assurance System within Educational Institutions(Y_8)	3.65	0.86	High	4
9. Aspect of Promoting Academic Knowledge within the Community (Y_9)	3.66	0.88	High	3
Overall Average	3.63	0.82	High	

From Table 1 , it is evident that the roles of school administration in internal quality assurance, as perceived by teachers in private schools under the jurisdiction of the Nonthaburi Provincial Education Office, were rated overall and in each aspect at a high level ($\bar{X}$ = 3.63, S.D. = 0.82). The aspects, ranked from the highest to the lowest mean, are as follows: development of educational media, innovations, and technology ($\bar{X}$ = 3.67, S.D. = 0.86); evaluation, assessment, and credit transfer of learning outcomes ($\bar{X}$ = 3.67, S.D. = 0.84); promotion of academic knowledge within the community ($\bar{X}$ = 3.66, S.D. = 0.88); development of internal quality assurance systems in schools ($\bar{X}$ = 3.65, S.D. = 0.86); educational supervision ($\bar{X}$ = 3.64, S.D. = 0.87); improvement of learning processes ($\bar{X}$ = 3.63, S.D. = 0.82); educational guidance ($\bar{X}$ = 3.61, S.D. = 0.86); development of learning resources ($\bar{X}$ = 3.61, S.D. = 0.86); and research for improving educational quality ($\bar{X}$ = 3.59, S.D. = 0.89).

Part 2: Analysis of the Effectiveness of Internal Quality Assurance Assessment in Schools by Teachers in Private Schools under the Jurisdiction of the Nonthaburi Provincial Education Office

Table 2: Mean and Standard Deviation of the Effectiveness of Internal Quality Assurance Assessment in Schools Based on Teachers' Opinions in Private Secondary Schools in Nonthaburi Province

Internal Quality Assurance in Educational Institutions	Level of Opinions			
	$\bar{X}$	**S.D.**	Level	Rank
1. Standard 1	3.69	0.78	High	2
2. Standard 2	3.71	0.77	High	1
3. Standard 3	3.69	0.80	High	3

Overall Average	3.70	0.77	High	

From Table 2, it was found that the efficiency of internal quality assessment within educational institutions, based on the opinions of teachers from private schools under the Nonthaburi Provincial Education Office, was overall rated at a high level ($\overline{X} = 3.70$, S.D. $= 0.77$). Ranked from the highest to the lowest average, the results are as follows: Standard 2 ($\overline{X} = 3.71$, S.D. = 0.77), Standard 1 ($\overline{X} = 3.69$, S.D. = 0.78), and Standard 3 ($\overline{X} = 3.69$, S.D. = 0.80).

Part 3: Results of the Comparison of Educational Administrators' Roles Affecting Internal Quality Assurance in Private Secondary Schools in Nonthaburi Province

Table 3: Mean and Standard Deviation of the Comparison of Educational Administrators' Roles Affecting Internal Quality Assurance in Private Secondary Schools in Nonthaburi Province, Categorized by Gender (Overall and by Aspects)

	The Role of Educational Administrators in Influencing Internal Quality Assurance	Gender				t	Sig.
		Male		Female			
		$\overline{x}$	S.D.	$\overline{x}$	S.D.		
1	The Development of Learning Processes	3.57	0.88	3.66	0.80	0.807	0.420
2	Assessment, Evaluation, and Credit Transfer of Learning Outcomes	3.57	0.92	3.71	0.81	1.167	0.244
3	Research for Educational Quality Improvement	3.56	0.98	3.60	0.85	0.389	0.697
4	Development of Educational Media, Innovations, and Technology	3.59	0.95	3.65	0.83	0.521	0.603
5	Development of Learning Resources	3.54	0.94	3.63	0.83	0.788	0.432
6	Educational Supervision	3.58	0.92	3.66	0.86	0.611	0.542
7	Educational Guidance	3.57	0.97	3.63	0.83	0.505	0.614
8	Development of Internal Quality Assurance Systems in Educational Institutions	3.62	0.91	3.67	0.84	0.370	0.711
9	Promoting Academic Knowledge in the Community	3.61	0.95	3.68	0.85	0.550	0.582
	รวม	3.58	0.90	3.66	0.79	0.705	0.481

From Table 3, it can be concluded that the role of school administrators in relation to the internal quality assurance does not depend on the gender of the teachers in private schools in Nonthaburi Province at a statistically significant level of .05. In other words, both male and female teachers have similar opinions regarding the role of school administrators in internal quality assurance, with no significant difference between them.

Table 4: Variables Showing the Relationship Between the Role of School Administrators and the Internal Quality Assurance of Private Schools in Nonthaburi Province

Predictor Variables in Order of Entry into the Equation	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	$\hat{\beta}$	Std. Error	Beta		
Constant Value	.528	0.77		6.850	
Development of Learning Processes (X_1)	.162	.049	.174	3.347	.001*
Research for Educational Quality Development (X_3)	.169	.055	.194	3.079	.002*
Educational Supervision (X_6)	.174	.058	.198	3.023	.003*
The Development of Internal Quality Assurance Systems in Educational Institutions (X_8)	.367	.054	.408	6.815	.000*

* Statistically Significant at the .05 Level

From Table 4, it was found that four aspects of the school administrators' academic management roles could predict internal quality assurance, including learning process development (X1), research for educational quality improvement (X3), educational supervision (X6), and the development of internal quality assurance systems (X8), in order of significance. These were statistically significant at the .05 level and collectively accounted for 87.4% of the prediction of internal quality assurance.

The roles that did not have a significant effect included assessment, evaluation, and credit transfer of academic results; the development of media, innovations, and educational technology; the development of learning resources; educational guidance; and the promotion of academic knowledge to the community. The equation can be written as follows:

The multiple regression analysis equation in terms of raw scores is as follows:
$\widehat{Y} = 0.528 + 0.162(a_1) + 0.169(a_3) + 0.174a_6 + 0.367(a_8)$

The multiple regression analysis equation in terms of standardized scores is as follows:
$\hat{Z} = 0.174(a_1) + 0.194(a_3) + 0.198(a_6) + 0.408(a_8)$

Section 4: Comments and Additional Suggestions Regarding the Development of the Academic Management Role of School Administrators and the Implementation of Internal Quality Assurance Operations are presented in the following table.

Table 5: Mean and Standard Deviation Regarding Comments and Additional Suggestions on Participation.

Opinions and additional suggestions regarding the development of the academic management role of school administrators	Frequency (n= 32)	Percentage
1. The institution should involve teachers, educational staff, and the school committee in the development of the school development plan.	11	21.56
2. The institution should incorporate the results of each year's performance into the planning for the following year	5	9.80
3. School administrators should provide opportunities for teachers and education personnel to participate in decision-making regarding the projects and activities they are responsible for	9	17.64
4. The school should involve teachers in developing the criteria for evaluating projects and activities that are related to them	4	7.84
5. The school should design projects and activities that align with the educational standards and the context of the school and community	3	5.88
6. The school administrators should provide opportunities for all teachers to participate in developing the development plan and the annual action plan	5	9.84
7. The school or administrators should establish a clear and flexible timeline for the implementation of projects and activities	6	11.76
8. The implementation of quality assurance should be kept up-to-date, and everyone must be aware that it is a responsibility in which all must participate	2	3.92
9. A committee should be appointed, or the responsible teacher should be assigned to continuously monitor the results and systematically organize the work	3	5.88
10. The school should use the results of the self-assessment to continuously improve	3	5.88

6. Discussion of the Research Findings

1. The level of the role of school administrators in ensuring the internal quality of education in schools under the Nonthaburi Provincial Education Office is generally high. This may be due to the National Education Act, B.E. 2542 (1999) and its amendments (No. 2), which stipulate that all sectors should participate in the management

of education by decentralizing administrative authority to the Educational Service Area and schools directly. This allows school administrators to manage using the school as a base and to operate with legal authority as a corporate entity, resulting in greater flexibility in the management of schools. Furthermore, teachers, as personnel within the school, have the responsibility to manage education, which may involve direct or indirect participation in planning, decision-making, implementation, or evaluation within the school. The results of this research are consistent with the study by Patipon Jamlong (2019: 146), who examined the relationship between participation and the implementation of internal quality assurance in schools under the Secondary Educational Service Area Office 33. The study found that the overall level of participation was high. Deunphen Yollchai (2019: 125) studied the approach to developing participatory management in schools under the Buriram Primary Educational Service Area Office 1. The study found that the overall level of participation was high. Pandungjai Hengkhetu (2016: 159-179) studied the relationship between participation and academic performance in schools under the Sakon Nakhon Primary Educational Service Area Office 1. The study found that the overall level of participation was high. Arunee Sirisukpaiboon (2015: 70-81) studied the participation of teachers in internal quality assurance at a primary school in Wang Wa Subdistrict, Klaeng District, Rayong Primary Educational Service Area Office. The study found that the overall level of participation was high. This is also consistent with the findings of Weerasak Wongin (2014: 66), who studied the involvement of teachers in academic administration in the Trat Primary Educational Service Area Office. The study found that the overall level of participation was high. When considering the data from the research results by category, it was found that the development of media, innovations, and educational technology was rated as high, with the highest average score. This may be because teaching media is considered as a "third hand" for teachers. It helps make teaching more enjoyable and serves as a medium or a tool for conveying information, knowledge, or announcements to students. The administrators also play a part in promoting and providing guidance to teachers, as well as in procuring, supporting, and facilitating teaching media. This research finding aligns with the Basic Education Curriculum, B.E. 2544, which states that learning media is a crucial factor in helping educational institutions achieve the goals of the curriculum. Media serves as a tool to convey knowledge and ideas, as well as to foster moral values, ethics, and experiences for learners. It also aligns with the research findings of Nathchalida Butrdee Wong (2018: 67), who studied the use of innovation and information technology for school management in the 21st century at Saen Suk School, under the Office of Secondary Education Service Area 18. The study found that the use of innovation and information technology for school management in this area was rated highly.

2. The study on the implementation of internal quality assurance in private schools under the Office of the Education Service Area, Nonthaburi, revealed that overall, the performance was rated highly ($\bar{X} = 3.70$). This may be due to the fact that all teachers have become aware that internal quality assurance activities are part of the regular tasks of the institution, aimed at continuously improving the quality of learners. Teachers and all staff in the institution actively participate in setting goals, planning, monitoring, evaluating, developing, and improving the school's quality to meet educational standards. This process aims to ensure confidence among those seeking educational services. Moreover, it serves as a safeguard to prevent the school from managing and delivering education of poor quality. It also helps to create educational quality as a mechanism that empowers the development of high-quality human resources. The findings of this study are consistent with the research of Phanop Jaengphloi (2013:79), who studied the situation of internal quality assurance implementation in schools under the Chantaburi Primary Education Service Area Office. The study found that the overall implementation of internal quality assurance was rated highly. Sukit Kanthahat (2018:73) studied the situation of internal quality assurance management by school administrators under the Buriram Primary Education Service Area Office 2. The study found that the overall implementation of internal quality assurance was rated highly. Sutham Treewiset (2019:104) studied the situation of internal quality assurance operations in schools under the Surin Primary Education Service Area Office 2. The study found that the overall implementation of internal quality assurance was rated highly. Phakwipa Lukngao (2019:75) studied the condition and approach to the implementation of internal quality assurance in schools under the Buriram Primary Education Service Area Office 1. The study found that the overall internal quality assurance operations were rated highly. When analyzing the results by aspect, it was found that Standard 2, related to teachers analyzing individual learners and using data to plan instruction to develop students' potential, was rated highly and had the highest average score. This may be due to the follow-up procedures, which involved a committee responsible for collecting information on projects and activities

throughout the academic year, using educational standards as a framework to monitor, review compliance, identify issues and obstacles, and make improvements in internal quality assurance operations.

These findings align with the research of Janjob Harnklap (2016:144), who studied the factors contributing to the successful implementation of internal quality assurance based on ministerial regulations in private schools in the Bangkok area, and found that follow-up of operations was rated highly. Kritpetcharawat Khempech (2017:52) conducted a study on the condition of internal quality assurance operations in schools under the Buriram Primary Education Service Area Office 3. The study found that the aspect of monitoring and following up on operations was rated highly.

3. The comparison of the roles of school administrators affecting internal quality assurance in private schools in Nonthaburi Province, based on gender (male and female teachers) and categorized by age, position, and work experience, revealed that there was no significant difference in their opinions. This could be due to the involvement of teachers, educational staff, and other stakeholders in all aspects and steps of the operations to enhance the efficiency of school management, particularly in internal quality assurance, which is a key mechanism in driving the development of educational quality at the institution. Therefore, it is crucial to ensure that all parties are involved in the implementation of the internal quality assurance system. The results of this study are consistent with the research conducted by Sunantha Thungsuk, Sakkada Sathapornchana, and Natthee Chalaywaret (2017: 93-99), who studied the relationship between participative management and school effectiveness in schools under the jurisdiction of the Primary Education Service Area Office. They found that participative management had a strong positive relationship with school effectiveness at a statistical significance level of 0.01, with a correlation coefficient of 0.87 Sopida Klainongsuang and Sumet Ngamkanok (2015: 135-146) studied the participative management that affects the effectiveness of schools under the Roi Et Primary Education Service Area Office, District 3. They found that the participative management of school administrators had a strong positive relationship with the effectiveness of schools at a statistical significance level of 0.01 This finding is consistent with the research by Warunee Bamrungsawat, Waro Pengsawat, and Sirida Borachat (2011: 39-46), who studied the factors affecting the effectiveness of internal quality assurance operations of schools under the Education Service Area Office in Nakhon Phanom province. They found that the factors influencing the effectiveness and efficiency of internal quality assurance operations in schools were participation and consultation with stakeholders, as well as teamwork. Additionally, factors that should be promoted to enhance the effectiveness of internal quality assurance operations in schools include participation and consultation with stakeholders, communication, and teamwork.

7. New Knowledge from Research

From this research, it was found that the roles of school administrators in educational quality assurance are as follows:
1. Participative Management - Administrators encourage teachers, staff, and stakeholders to actively engage in every stage of the process, including planning, implementation, and evaluation. This inclusive approach fosters a sense of shared ownership and responsibility, while motivating all parties to contribute meaningfully to the quality improvement process.
2. Systematic Planning - Administrators establish clear and achievable goals through comprehensive planning that addresses all dimensions, including monitoring progress, reviewing processes, and implementing continuous problem-solving measures.
3. Capacity Building - Administrators provide training to enhance skills, such as utilizing quality assessment tools and data analysis programs. They also support lifelong learning for teachers and staff by encouraging further education or participation in academic seminars and conferences.
4. Quality-Oriented Culture - Administrators foster an organizational culture that emphasizes quality and transparency. They create an environment that encourages teamwork and open exchange of ideas, promoting collaboration and continuous improvement.
5. Technology Integration - Administrators utilize technology to enhance evaluation and data management, such as using online systems for tracking and assessment. They also support the development of digital learning resources to expand students' learning opportunities.

6. Networking and Collaboration - Administrators build partnerships with external organizations, such as universities, private sectors, or communities, to exchange resources and knowledge, fostering collaborative efforts to enhance educational quality.
7. Monitoring and Evaluation - Administrators establish clear and transparent systems for monitoring and evaluation, utilizing Key Performance Indicators (KPIs) and conducting regular reviews of performance to ensure continuous progress and improvement.
8. Visionary Leadership - Visionary administrators set clear directions and goals, such as preparing the institution to meet international standards. They inspire teachers and staff to recognize the long-term value of educational quality development.
9. Teamwork Enhancement - Administrators build strong teams to improve operational efficiency. They promote consultation and collaboration at all levels, fostering a cooperative environment that enhances the effectiveness of work processes.
10. Effective Communication - Administrators establish clear and transparent communication systems between administrators, teachers, staff, and parents. This reduces misunderstandings and fosters good cooperation in the quality improvement process.

8. Recommendations

Based on the study of the roles of school administrators in internal quality assurance at private schools in Nonthaburi Province, it was found that approaches to developing administrative skills can be effectively applied to address and enhance internal quality assurance in educational institutions. The researcher therefore offers the following suggestions:

1. Development of Learning Processes - To address the lowest average scores, proactive learning should be promoted. Teachers should be encouraged to adopt learner-centered teaching methods, such as project-based or problem-based learning. Training programs should be organized to enhance teaching skills and the use of technology for creating modern learning materials. There should be regular monitoring and evaluation of learning outcomes, utilizing assessment data to refine teaching processes. Additionally, a Professional Learning Community (PLC) should be fostered within the school by establishing networks for knowledge exchange among teachers to collaboratively improve teaching practices.
2. Assessment, Evaluation, and Credit Transfer - The lowest average scores indicate the need for administrators to develop a comprehensive evaluation system. A variety of appropriate tools should be employed to accurately reflect students' true potential. The assessment process should be improved by setting clear and transparent criteria for credit transfer. Evaluation results should be utilized systematically to enhance curriculum design and school management. Furthermore, collaboration and mutual understanding between teachers and parents regarding assessment and credit transfer standards should be established to ensure alignment and support for the evaluation process.
3. Research for Educational Quality Improvement - The lowest average scores highlight the need for administrators to seek new knowledge to foster research within the institution. Administrators should encourage teachers and staff to conduct classroom and administrative research. Adequate resources, budgets, equipment, and time must be allocated to research activities that aim to improve educational quality. Training sessions or workshops on research should be organized to enhance staff capabilities. Additionally, research findings should be effectively utilized to refine teaching methodologies and administrative processes, ensuring that improvements are evidence-based and aligned with the institution's goals.
4. Development of Educational Media, Innovation, and Technology - The lowest average scores in the use of educational technology suggest a need for appropriate technological advancements. Administrators should invest in media and technology that effectively support learning and management processes. Training sessions should be conducted to equip teachers and staff with the skills to creatively utilize instructional and administrative innovations. Moreover, a monitoring and evaluation system should be established to track the use of media and technology, ensuring its effective implementation and allowing for adjustments as needed to enhance outcomes.
5. Development of Learning Resources - The lowest average scores in this area indicate that administrators should allocate resources and develop learning resources that are modern and align with learners' needs. Efforts should include supporting lifelong learning, promoting the use of technology and digital media to expand learning

opportunities, and fostering collaboration with communities and external organizations to broaden the scope of learning resources. Monitoring and evaluation systems should be implemented to assess the utilization of these resources and ensure continuous improvement for maximum efficiency and impact.

6. Educational Supervision - The lowest average scores in this area suggest that administrators should develop a clear supervision plan with defined goals and guidelines focusing on problem-solving and school improvement. Continuous monitoring and evaluation should be conducted to assess progress, accompanied by constructive feedback for timely adjustments. Administrators should also promote collaborative learning by organizing knowledge-sharing activities among teachers and staff to enhance overall performance and efficiency.

7. Educational Guidance - The lowest average score in this area indicates that administrators should establish clear goals and guidelines for educational guidance that align with the context of the school. Additionally, there should be a focus on developing staff skills by organizing training or skill-enhancement programs related to educational counseling for teachers and relevant personnel.

8. Development of Internal Quality Assurance System - The lowest average score in this area suggests that administrators should set clear goals and measurable quality indicators. Opportunities should be provided for teachers, staff, and parents to participate in the quality assurance process. A monitoring system should be established to track performance and make improvements based on the collected data. Additionally, training or skill development should be organized to equip teachers and staff with knowledge on quality assurance practices.

9. Promotion of Academic Knowledge in the Community - The lowest average score in this area indicates the need for organizing practical workshops. Administrators should arrange training activities to enhance academic knowledge for teachers and staff. An academic network should be established, fostering collaboration with the community, parents, and local experts to promote shared learning. Additionally, knowledge exchange should be encouraged by organizing platforms where teachers and the community can share best practices to address challenges and improve the quality of education.

9. Suggestions for Future Research

1. Promote participation by creating opportunities for teachers, staff, parents, and students to engage in the quality assurance process.
2. Set clear goals, plan, and establish objectives that align with the needs of the students.
3. Continuously monitor and evaluate, track the progress of the operations, and make improvements based on the received data.
4. Support resources and technology by allocating appropriate resources and utilizing technology to enhance the learning process.
5. Create a conducive environment by organizing a learning-friendly, safe, and creativity-stimulating atmosphere.
6. Develop teachers and staff by supporting the enhancement of their skills and knowledge to be ready for change.

The role of leadership that focuses on student development and fostering collaboration within the organization will help elevate the quality of education sustainably.

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The Use of Good Governance Principles Affecting the Administration of Private School Administrators in Mueang Nakhon Ratchasima District under the Office of Education, Nakhon Ratchasima Province

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Abstract
This study aimed to: (1) assess the level of governance principles applied by private school administrators based on teachers' perceptions in Mueang District, Nakhon Ratchasima; (2) evaluate the administrative performance of private school leaders as perceived by teachers; and (3) analyze the impact of governance principles on administrative performance. The study population comprised 1,060 teachers from 43 private schools, with a sample of 285 teachers selected through systematic random sampling. Data were collected using a questionnaire with a reliability coefficient of 0.89. Statistical methods included means, standard deviations, and multiple regression analysis. The findings revealed that: (1) governance principles were rated at a high level, with rule of law scoring the highest and efficiency the lowest; (2) administrative performance was also rated highly, with academic management receiving the highest score and budget management the lowest; (3) governance principles significantly influenced the administrative performance of school leaders. Seven key factors—efficiency, effectiveness, accountability, transparency, participation, decentralization, and consensus—were identified as significant predictors, collectively explaining 98.90% of the variance in school administration ($p < 0.05$). In conclusion, integrating governance principles into school administration is recommended to enhance leadership effectiveness and support sustainable educational development.

Keywords: Good Governance, Administration, School Leadership

1. Introduction

Good governance principles play a crucial role in enhancing administrative efficiency, improving organizational credibility, and increasing institutional potential in alignment with national development strategies. These principles foster transparency, integrity, and fairness in administration (Bovornsak Uwano, 2017). Governance principles are categorized into ten key components: effectiveness, efficiency, responsiveness, accountability, transparency, participation, decentralization, the rule of law, equity, and consensus orientation (Office of the Public Sector Development Commission, 2009).

In the modern era, leadership requires a strong foundation in governance principles to ensure responsible and transparent management, prevent corruption, and encourage stakeholder participation. Effective administrators must embody ethical attributes, including mindfulness, honesty, justice, self-discipline, self-sacrifice, rationality, compassion, loyalty, frugality, focus, and sincerity (Somsak Suphirak, 2011). As a result, governance principles have become widely applied in various organizations, strengthening efficiency and public trust (Sutham Songsiri, 2010).

In the field of school administration, achieving success requires an effective management approach that prioritizes student benefits. Governance principles serve as a fundamental framework for educational leadership (Office of the Minister, 2015). However, contemporary school administration faces challenges arising from mismanagement, which often results in inefficiency, organizational conflicts, and a lack of trust among stakeholders (Jaruwan Surin, 2009). A review of related educational management issues reveals three key problems: (1) educational policies focus heavily on academic development while neglecting essential life skills; (2) schools increasingly function as competitive environments rather than inclusive learning spaces; and (3) the education system fails to cultivate competencies that align with policy expectations.

Furthermore, reports from the Nakhon Ratchasima Provincial Education Office highlight two significant obstacles: (1) a lack of consistent educational policy development due to decentralization and unforeseen challenges such as the COVID-19 pandemic, and (2) insufficient educational information technology infrastructure. In private schools within Mueang District, Nakhon Ratchasima, a high level of academic competition has led to increased pressure on students and heightened parental expectations. Therefore, adopting governance principles in school administration is essential to building trust and confidence among students, parents, and the broader educational community (Nakhon Ratchasima Provincial Education Office, 2018).

Based on these considerations, this study aims to explore the application of governance principles in the administration of private schools under the jurisdiction of the Nakhon Ratchasima Provincial Education Office. Specifically, the research seeks to assess the extent to which these principles are implemented and their impact on school management. The findings will provide valuable insights for administrators and relevant stakeholders, supporting improvements in educational governance and facilitating sustainable development in school administration.

2. Research Objectives

1. To examine the level of governance principles applied by private school administrators based on teachers' perceptions in Mueang District, Nakhon Ratchasima.
2. To assess the administrative performance of private school leaders as perceived by teachers in Mueang District, Nakhon Ratchasima.
3. To investigate the impact of governance principles on the administrative performance of private school leaders based on teachers' perceptions in Mueang District, Nakhon Ratchasima.

3. Research Methodology

This study employs the following research methodology:

3.1 Research Design

This study is quantitative research (Quantitative Research).

3.2 Population and Sample

The population for this study consists of 1,060 private school teachers from 43 private schools in Mueang District, Nakhon Ratchasima (Nakhon Ratchasima Provincial Education Office, 2021). The sample includes 285 private school teachers selected using the following procedure: the sample size was determined based on Krejcie and

Morgan's (1970) sample size table, followed by systematic random sampling with proportional allocation according to school size.

3.3 Research Instrument

The research instrument is a questionnaire developed by the researcher in alignment with the research objectives.

The questionnaire is structured using a five-point Likert scale and is divided into three sections:

Section 1: Personal demographic information.

Section 2: Governance principles applied by private school administrators in Mueang District, Nakhon Ratchasima (71 items).

Section 3: Administrative performance of private school administrators in Mueang District, Nakhon Ratchasima (47 items).

The questionnaire underwent a quality assessment by five experts to ensure its validity and reliability.

3.4 Data Collection Procedure

The data collection process follows these steps:

1. The researcher obtains a letter of cooperation request from Suvarnabhumi Institute of Technology to seek approval for data collection from private school administrators.
2. The letter is presented to private school administrators in Mueang District, Nakhon Ratchasima, for approval and permission to distribute the questionnaire.
3. The completed questionnaires are collected and checked for completeness.
4. The responses are scored according to the research objectives and prepared for data analysis.

3.5 Data Analysis and Statistical Methods

The collected data is analyzed using statistical software. The statistical methods used include:

1. Descriptive statistics: Mean and Standard Deviation (S.D.)
2. Inferential statistics: Hypothesis testing is conducted using Multiple Regression Analysis (MRA) to determine relationships between variables.

4. Research Findings

The research findings indicate the following:
The analysis of governance principles applied by private school administrators in Mueang District, Nakhon Ratchasima, both overall and by specific aspects, is summarized in Table 1.

Table 1: Mean and Standard Deviation of Governance Principles Applied by Private School Administrators in Mueang District, Nakhon Ratchasima (Overall)

n=285

	Governance Principle	Level of Implementation		Interpretation	Rank
		$\bar{x}$	S.D.		
1.	Effectiveness	4.05	0.80	High	10
2.	Efficiency	3.94	0.94	High	7
3.	Responsiveness	3.93	0.93	High	8
4.	Accountability	4.03	0.86	High	4
5.	Transparency	4.03	0.85	High	3
6.	Participation	4.01	0.87	High	5
7.	Decentralization	3.90	0.98	High	9
8.	Rule of Law	4.12	0.78	High	1
9.	Equity	4.08	0.77	High	2

10.	Consensus Orientation	4.00	0.90		6
	Overall (X_{tot})	**4.01**	**0.84**	**High**	

From Table 1, it was found that the overall and individual aspects of the implementation of good governance principles by private school administrators in Mueang Nakhon Ratchasima District were at a high level. The highest mean score was for the Rule of Law principle, followed by the Equity principle, while the lowest mean score was for the Effectiveness principle.

2. The results of the data analysis on the collaboration among teachers in private schools in Mueang Nakhon Ratchasima District, both overall and in specific aspects, are presented in Table 2

Table 2: Mean and Standard Deviation of School Administration by Private School Administrators in Mueang Nakhon Ratchasima District (Overall) (Y_{tot})

n=285

Administration of School Leaders	**Level of Opinion**		**Interpretation**	**Rank**
	$\bar{x}$	S.D.		
1. Academic Administration	3.95	0.92	High	1
2. Budget Administration	3.51	0.99	High	4
3. Personnel Administration	3.89	0.98	High	2
4. General Administration	3.89	0.99	High	3
Average (Y_{tot})	**3.81**	**0.98**	**High**	

From Table 2, it is found that the overall and individual aspects of the administration of school leaders in private schools in Mueang Nakhon Ratchasima are rated at a high level. The highest average score is for academic administration, followed by personnel administration, and the lowest is for budget administration.

3. The results of the analysis on the application of governance principles affecting the administrative performance of private school leaders in Mueang Nakhon Ratchasima are shown in Table 3.

Table 3: Presents the results of the multiple regression analysis of the variables used to predict the application of governance principles that impact the administration of private school leaders in Mueang Nakhon Ratchasima.

Predictive Variable	**Unstandardized Coefficients**		**standardized Coefficients**	**t**	**Sig**
	$\hat{\beta}$	**Std. Error**	**Beta**		
(Constant)	-0.607	0.056		-10.749	.000*
1. Effectiveness	0.89	0.020	0.073	4.513	.000*
2. Efficiency	-1.647	0.082	-1.595	-20.194	.000*
3. Accountability	0.881	0.061	0.780	14.506	.000*
4. Transparency	0.840	0.088	0.737	9.539	.000*
5. Participation	-1.072	0.090	-0.959	-11.948	.000*
6. Decentralization	0.89	0.020	0.073	4.513	.000*
7. Consensus Orientation	0.901	0.071	0.829	12.682	.000*
$R = 0.989$ $R^2 = 0.995$ Adjusted $R^2 = 0.989$ S.E.b.= 0.102 F= 91.42 p= .000					

* the result is statistically significant at the 0.05 level.

From Table 4.18, it shows that the governance variables selected in the model, in order, are effectiveness, efficiency, accountability, transparency, participation, decentralization, and consensus-building. The multiple correlation coefficient is .995, and the predictive efficiency is 0.989. This means that the seven variables together predict 98.90% of the school management performance of school leaders in private schools in Mueang Nakhon Ratchasima with statistical significance at the .05 level.

5. Discussion of Results

5.1. Research Results on the Use of Good Governance Principles and Their Impact on the Management of Private School Administrators in Mueang Nakhon Ratchasima District, under the Nakhon Ratchasima Provincial Education Office

Overall, the results show that the use of good governance principles in the management of private school administrators was rated highly. This could be due to the administrators prioritizing the collective good over personal interests, addressing issues within the schools, and making improvements. This aligns with the research of Surasak Phanthura (2016), who studied the relationship between management according to good governance principles, and found that good governance, being a well-established management approach, is essential in educational management to achieve efficiency, effectiveness, and organizational development. Therefore, it is crucial to adopt good governance principles for school management to ensure proper management of school resources and contribute to the overall development of the organization.

5.1.1 Research Results on the Use of Good Governance Principles in the Area of the Rule of Law

The highest average was observed in this area. This could be due to administrators' awareness of the importance of clear governance based on the law without discrimination, leading to ethical management. Such practices ensure transparency, fairness, and equality, fostering a participatory atmosphere within the school, which ultimately leads to high levels of satisfaction. This is in line with the research by Theerakiat Thodtonphum (2017), who found that good governance in the management of educational areas also reflected a high level of implementation.

5.1.2 Research Findings on the Use of Good Governance Principles in the Area of Effectiveness

The lowest average was recorded here. This may be because administrators did not provide sufficient opportunities for team members to participate or encourage them to express their opinions. This aligns with the research of Suchart Singhsamrong (2019), who examined techniques for improving organizational effectiveness. His research showed that organizational effectiveness depends on factors such as resource utilization, member satisfaction, and investment in human resources, especially training and development.

5.2 Research Results on the Management of Private School Administrators in Mueang Nakhon Ratchasima District

The overall results were rated highly, likely due to clear, coordinated management practices that involve all four parties to ensure success. This corresponds to the findings of Rungtiwa Klathmuk and Chuan Pharangkul (2021), who studied the collaboration among teachers in local administrative schools, noting that working together and communication was essential for achieving organizational goals.

5.2.1 Research Results on Academic Management

The highest average was observed in this area, which can be attributed to continuous curriculum development and learning processes with the cooperation of all school teachers. Proper planning and collaborative work led to the success of their efforts. This aligns with the research of Aritsara Umsin (2017), which emphasized the importance of team coordination, systematic work, and ongoing professional development to significantly impact students' academic achievements.

5.2.2 Research Results on Budget Management

The lowest average was observed here. This may be due to issues related to procurement transparency and unclear internal audit processes, lack of diversified resource management methods, and delayed or inadequate communication. This corresponds to the research of Suwanna Pongphongphool (2015), who found that communication problems within organizations are often caused by multiple factors affecting successful information dissemination.

5.3 Results of Research on the Predictive Variables for the Use of Good Governance Principles Impacting School Management

The research identified seven key variables, in order: effectiveness, efficiency, responsibility, transparency, participation, decentralization, and consensus-building. These factors together explain 98.90% of the variance in the use of good governance principles impacting the management of private school administrators in Mueang Nakhon Ratchasima, with statistical significance at the 0.05 level. This suggests that administrators' focus on effectiveness and responsibility influences organizational outcomes and decision-making processes to continuously improve quality. These findings support the goal-setting theory of Yukl (1989), which emphasizes the importance of clear role definition, support for effort, and transparency in rewarding outcomes.

5.3.1 Findings on the Impact of Decentralization

Decentralization was found to be the most significant predictor of school management, possibly because administrators and teachers collaborated to address community needs by decentralizing power to those closest to the stakeholders. This allowed quicker problem-solving and more community involvement in school development. This is in line with the research by Komkrit Prakarasang (2016), who found that modern school management encourages community participation to benefit students, where leaders foster good relationships and teamwork rather than top-down directives.

5.3.2 Findings on the Impact of Transparency

Transparency was found to be the least significant predictor. This may be because administrators have not fully developed effective processes for identifying and solving problems in a comprehensive manner, including gathering diverse viewpoints for problem-solving and ensuring communication with stakeholders. This is in line with the research by Rungtiwa Klathmuk and Chuan Pharangkul (2021), which found that some administrators did not prioritize feedback from staff or motivate their subordinates to innovate or improve work processes, leading to a lack of clear mutual understanding in activities.

6. Summary/Recommendations

The study on the use of good governance principles and their impact on the management of private school administrators in Mueang Nakhon Ratchasima concludes as follows:

1. Overall, the use of good governance principles by private school administrators in the area is rated highly because they implement management practices that prioritize collective interests, listen to stakeholders' opinions, and solve problems promptly.
2. The management of private school administrators is highly effective due to the well-coordinated efforts of all involved parties, ensuring that educational policies are implemented and continuously improved.
3. The study identifies seven predictive variables, which together explain a significant portion of the variance in governance practices, ensuring that all aspects of school management are effectively handled.

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Finishing strong in May: Difficulties and Management Strategies at the End of the School Year

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Abstract
This article investigates the crucial period of May in schools and the difficulties emerging in the learning process towards the end of the school year while recording certain strategies for managing this period. By studying a sample of secondary school teachers, the research shows that the most important difficulties teachers face during May, are psychological and mental fatigue, distraction of students, increased organizational and administrative obligations, emotional stress, and anxiety about the next school year. These difficulties can be eliminated or reduced by specific management strategies such as playful teaching and experiential activities, educational visits and excursions, preparations for school events and end-of-school celebrations, sports activities, competitions, tournaments, and a review of the year with feedback and discussion. Successfully implementing the above strategies depends on many factors and the specificities of each learning process.

Keywords: May, Secondary Education, School Year, Difficulties, Strategies

1. Introduction

The beginning of each school year is an important moment for students, parents, and teachers, as it marks a new beginning full of challenges, opportunities, and goals. It is when the foundations are laid for academic progress, personal growth, and the establishment of new relationships. As summer ends and the first school bell of the year is about to ring, excitement and anxiety can fill the air (Fareedi, 2024). For students, it is an opportunity to explore new areas of knowledge, discover their interests, and set goals for their progress. Parents have the opportunity to support their children and foster an environment that enhances learning and confidence. Finally, for teachers, the beginning of the school year is a time to inspire, guide, and build trusting relationships with their students. The importance of commencement is not limited to lessons alone. It is when habits are formed, discipline is reinforced and cooperation is developed (Park, 2024). With a positive attitude and organization, the beginning of the year can set the tone for a successful and creative school experience.

In the Greek education system, a typical school year for secondary education begins in September and ends in May. More specifically, each school year is divided into two semesters, with the first semester lasting from the beginning of classes until the end of January and the second semester from the beginning of February until the end

of classes, which is determined by a decision of the Ministry of Education and is usually determined towards the middle of May, depending on when the Easter holidays are each year.

In the flow of the school year, each month undoubtedly has its particular characteristics, which influence the development of the learning process. For example, September marks the beginning of the school year and the return of teachers and students to school after the summer holidays. This is the month when the timetable is drawn up and books are distributed to students. September is crucial for building relationships between students and teachers, as well as for creating a positive classroom climate. Students get to know their new classmates and teachers, influencing their interaction and learning (Fareedi, 2024; Park, 2024).

Gradually and up to October, everyone begins to adapt to the daily reality of school, with teachers starting to teach individual lessons and students organizing their reading. In the first month, it is very likely that there will still be changes to the school timetable, while October sees the first school celebration, the 28th of October, with school events, speeches, and parades. The first two months of the school year are critical, as they lay the foundations for the learning process and the learning climate begins to take shape, which will determine individual parameters for the following months.

In November, and as everyone has adjusted to the learning process as it unfolds, the first tests are administered to give teachers and students first feedback. The tests continue in December, the month towards the end of which there is a two-week Christmas holiday. In January, schools reopen, and everyone prepares for the end of the first quarter at the end of that month. Teachers have formed a picture of student performance and proceed with their assessment, as students receive written progress checks with grades in each subject in early February. At the same time, the second quarter begins and lessons, educational activities, various projects and educational visits to the daily life of the school unit continue.

In some subjects, teachers slowly complete the curriculum in March, while towards the end of the month, there is the national celebration of 25 March, with corresponding school celebrations and events. In April, the learning process continues, and as the curriculum prescribed by the syllabus is gradually completed, the first preparations are made for the examinations at the end of the year. In addition, improving weather conditions allows the planning and organization of school trips and educational visits. In addition, towards the middle or end of the month, depending on the calendar year, there is a two-week break for Easter. After the Easter holidays, teachers and students return to school, as May marks the end of classes and the beginning of examinations.

1.1 May's peculiarities

May is a time with significant peculiarities and challenges for teachers and students, who experience various emotions as the school year draws to a close. The feelings at the end of the school year are complex, vary from person to person, and vary depending on the specifics of the particular situation, but generally manifest themselves as a combination of fatigue (mental and psychological), reduced willingness to learn, lack of mental focus, joy, relief, but also sadness and anxiety (Turner, 2024).

There is often a tendency, in the last lessons of the school year and as the weather conditions foreshadow the arrival of summer, for there to be a generalized relaxation, as a result of the accumulated fatigue of the whole year, which in some cases reaches the limits of "deregulation" (Boudreau, 2019). Stress and pressure are most pronounced at this time of year and create a feeling of fatigue and impatience for the end of the school year (Park, 2024). In addition, behavioral issues emerge as some students feel like they are done for the year and lose motivation (Watson, 2013).

In this context, teachers, as important factors in shaping the learning climate, are called upon to ensure the conditions that will allow the smooth and successful completion of lessons, preparing students as fully as possible for the upcoming examinations. Thus, teachers must limit any "deregulation" of the learning process as much as possible and maintain a positive learning climate until the end (Wang, Degol, Amemiya, Parr &Guo, 2020; Barksdale, Peters & Corrales, 2019; Sonnemann & Griffiths, 2017).

To achieve this, teachers can adopt several management strategies that will "break" the school routine and contribute to the smooth closure of the learning process. Students are more likely to act out when bored or disengaged, so teachers should keep them active and engaged in the classroom, through a variety of strategies and activities (Kay-Lewis, 2024). These strategies can be playful forms of teaching with activities inside and outside the classroom (knowledge quizzes, repetitive crosswords, interactive platforms, and educational applications using PCs or tablets), educational visits-tours, sports activities, hands-on projects, competitions, and tournaments, preparations for school events and closing celebrations, as well as organized discussions to review the school year to draw useful conclusions and provide feedback. These activities should be planned and implemented in a flexible framework adapted to students' needs, taking into consideration the specific characteristics, and the dynamics of each class.

At the same time, a framework of psychological support should be put in place to help students and teachers manage the intense emotions, stress, and psychological pressure of this period. School psychologists can also help in this direction, with the guidance of school psychologists, with whose advice support groups can be set up within the school where pupils and teachers can share experiences and strategies for dealing with stress and pressure. These groups can provide a safe environment for expressing feelings and sharing opinions and advice (Minshew, 2019; Sauber-Millaci, 2021). In addition, during this hectic time, school principals can organize colleague meetings and foster collaboration among teachers for support, whether it's brainstorming lesson ideas, sharing resources, or simply sharing strategies for managing end-of-year stress effectively (Black, 2023). The management of stress and fatigue can also be assisted by the use of social-emotional learning (SEL) strategies, which help students to identify and manage emotions, develop self-awareness and self-control, monitor changes in the learning environment, manage conflicts, enhance positive self-image and ultimately create a positive school climate.

Furthermore, in the psychological management of May's difficulties, the role of the student's family environment is also crucial. For this reason, the collaboration between teachers and parents should be encouraged to have an open communication channel and create a broader supportive framework (Hoferichter, Kulakow & Raufelder, 2022). Thus, frequent communication between teachers and parents and possibly organizing scheduled meetings, open conferences, and briefings can work as a supportive measure.

Moreover, this period, although demanding, is an opportunity for reflection and preparation for the next school year, to continuously improve the educational experience. Thus, at the end of the course, an evaluation of the whole school year can be carried out to provide feedback, draw useful conclusions, and highlight the strengths and weaknesses of the completed year. In this process, it is advisable to encourage students' active participation and use the educational discussion technique to express the opinions, assessments, and observations of as many students as possible. Undoubtedly, organization plays a critical role in this period and can make the transition into the new school year smoother and less stressful, as a well-organized school environment enhances productivity and reduces stress (Jorgensen, 2024).

At the same time, however, teachers in May are required to carry out several tasks as they complete the final assessment of students with exams and assignments and record in statements detailed scores and absences of students. School events such as graduation and closing ceremonies are also organized and held during this period. In many school units, an inventory is made of the materials and resources used during the school year and initial planning for the use of the material and technical infrastructure in the following school year. For their part, students are invited to study for the final examinations that determine their final grade and their transition to the next grade as well as to actively participate in the end-of-school-year events.

2. Method

In recent years, several studies and articles have been written on the particularities of the end of the school year, enriching the literature (Ferlazzo, 2024; Dene Poth, 2023; Williams, 2023). However, no extensive scientific research has been conducted on the difficulties faced by teachers during this period and the best strategies for managing the "special month of May." This fact was an additional motivation for the present study, for which qualitative and quantitative research using the purposive sampling method was used. More specifically, purposive

sampling was chosen for both the qualitative (interviews) and quantitative (questionnaire) research as it was deemed by the researchers to be the most appropriate method for this particular circumstance.

Purposive sampling presents specific advantages as it leverages the researchers' experience and network of contacts, selects cases typical to the topic under study, and saves time and costs during the implementation of the research (Campbell et al., 2020; Kelly, Bourgeault & Dingwall, 2010). On the other hand, purposive sampling also has some weak points and disadvantages, as it involves the subjective judgment of the researchers, and the results may not always be generalizable and representative (Robson, 2011).

In this case, a purposive sample of Secondary school teachers was used and initially, as part of the qualitative research, 5 semi-structured interviews were conducted in May 2024. These interviews were a first record of opinions and assessments while preparing the groundwork for the design of the questionnaire to be used in a second phase, during the quantitative research. Thus, considering the conclusions of the interviews and based on the objectives of the study, the questionnaire was designed, which was intended to be simple in its structure but also comprehensive, so as not to "tire" the research participants. More specifically, the questionnaire contained closed-ended Likert scale questions and was sent via Google Forms by email at the beginning of June 2024 to a sample of 54 teachers, of whom 50 responded, with a response rate of 92.6%.

3. Results

Recording the results of the quantitative research, of the 50 teachers who responded to the questionnaire, 28 were female (56%) and 22 were male (44%). Regarding the respondents' age, at the time of the research, 14 of them were aged between 31-40 (28%), 23 between 41-50 years (46%), 9 between 51-60 years (18%) and 4 over 60 years (8%) (Table 1). Moreover, an important parameter in teachers' profiles is their years of experience in the field. Of the participants, 8 had 1-5 years of experience (16%), 13 had 6-10 years (26%), 16 had 11-15 years (32%) and 13 had more than 15 years of experience (26%) (Table 1). Regarding postgraduate studies, 22 of the participants held a postgraduate degree (44%) while 28 of them had no postgraduate studies at the time of the survey (Table 1).

Table 1: The profile of the teachers who participated in the research

Sex	Men: 22 (44%) Women: 28 (56%)				Total: 50
Age (years)	31-40	41-50	51-60	>60	
	14 (28%)	23 (46%)	9 (18%)	4 (8%)	Total: 50
Years of teaching experience	1-5	6-10	11-15	>15	
	8 (16%)	13 (26%)	16 (32%)	13 (26%)	Total: 50
Postgraduate studies	Yes: 26 (52%) No: 24 (48%)				Total: 50

The research then focused on the difficulties that teachers face in the last days of the school year, during May. Considering the findings of the interviews conducted during the qualitative research stage and the relevant literature [8], [9], [10,]the quantitative research participants were asked to rate the importance of each difficulty on a five-point scale (5 = very important, 4 = important, 3 = moderately important, 2 = somewhat important, 1 = not at all important). As can be seen from the responses (Table 2), the top five most important difficulties in May were: psychological and mental fatigue (4.96), student distraction (4.88), increased organizational and administrative responsibilities (4.35), emotional stress (4.01), and anxiety about the next school year (3.09).

Table 2: Difficulties faced by teachers in May in the learning process

Difficulty	Mean Score
Psychological and mental fatigue	4.96
Student distraction	4.88
Increased organizational and administrative obligations	4.35
Emotional stress	4.01
Stress for the next school year	3.09

The difficulties above, which are very much present in May, and the particularities that occur at the end of the school year, make it necessary to adopt specific strategies for teachers to manage the whole situation effectively. Based on the relevant literature [21], [16], [22], as well as the interviews conducted during the qualitative research, five specific management strategies were selected and the teachers participating in the research were asked to rate the effectiveness of each of them on a five-point scale (5 = very much, 4 = very much, 3 = moderately, 2 = a little, 1 = not at all). As demonstrated in Table 3, according to the teachers interviewed, an effective management strategy for May's difficulties is the implementation of playful forms of teaching and related activities (4.94). Also, some other strategies are educational visits-trips (4.87), sports activities-competitions-tournaments (4.45), preparation for school events-end of-year celebrations (4.39), and reviewing the year with feedback discussion (Table 3).

Table 3: Management strategies for the last days of the school year

Management strategy	Mean Score
Playful forms of teaching-activities	4.94
Educational field trips-study visits	4.87
Sports activities-competitions-tournaments	4.45
Preparing for school events - end-of-school celebrations	4.39
Review of the year with feedback discussion	4.31

The above strategies can be used in schools, to facilitate the smooth closure of the school year. The effectiveness of each strategy depends on several factors depending on the particularities of each situation. Each school has its own distinct identity, to which the strategies adopted should be adapted and obviously these strategies can be changed and adapted to the learning situation.

4. Discussion

The end of each school year is critical as it completes an eight-month learning process, which starts in September and lasts until May. In the flow of the school year, each month has its particularities and activities that determine the course of the school year from its beginning to its end. Undoubtedly, May has many important features, as it is the month that concludes the lessons, which is the last image of the learning process and the one that remains in the minds of teachers and students.

As the school year draws to a close, the difficulties emerging in May are various and particular, making the closure of the learning process "heavy" and making teachers' work more difficult. Sometimes, disruptive student behavior is associated with negative outcomes, including poor grades, low achievement scores, dropout, lost teaching time, and teacher burnout (Zoromski, 2021).

The feeling of fatigue that overwhelms students and teachers alike can harm the learning climate, to some extent demolishing what has been built up throughout the school year. Thus, careful management by teachers and the adoption of specific strategies that can reduce the difficulties and contribute to the smooth closure of the school year, are needed. Apart from the management strategies depicted in this study, several other strategies can be applied, depending on the interests of the students as well as on the creativity, imagination, and scientific expertise of the teachers (Mulvahill, 2024). In any case, there is no "perfect" strategy, something that may work effectively in one situation may not work effectively in another, as different parameters are involved each time. Either way, however, students' active participation and involvement in planning and implementing activities is a key factor for a 'strong' end to the school year (Blackwell, 2019; Wilkey Oh, 2022). After all, students are at the heart of the educational process and their involvement is essential in every case. Keeping students engaged at the end of the year can be challenging, but it's crucial, as engagement boosts student motivation and promotes active learning (Dene Poth, 2023).

This particular period requires teachers to be observant, flexible, and adaptive, ensuring that the management strategies they implement effectively support the learning process (Love, 2013) and establish a positive learning environment (Tak & Shing, 2008; Weis, 2017; Rusticus, Pashootan & Mah, 2023; Banks, 2014). Obviously, in

managing May's particularities, the proper preparation that has already been carried out in the previous months also plays an important role (Desautels, 2016). Many of the difficulties of May can be avoided or managed effectively if teachers and students establish a positive framework in the school unit from the beginning of the year. It is no exaggeration to say that the school year's closing reflects the work done throughout the previous months.

This study contributes to the enrichment of the relevant literature as it deals with an issue that has not been the subject of extensive scientific research. However, it is of great concern to teachers every year. The findings can be useful to all those involved in school life: teachers, students, parents of students, and school principals, as the school year's end, can become a time of mixed feelings, sometimes including stress and anxiety. Thus, this research can contribute to the debate on how to manage more effectively the difficulties that arise towards the end of a school year.

Concerning the generalizability of the research's findings, there are limitations arising from the use of purposive sampling, but careful sample selection makes the results applicable to a wider population. Regarding suggestions for further research, it would be interesting to conduct similar research in other regions of Greece, studying other samples of teachers. Also, similar case studies could be conducted in schools in different countries and internationally to record opinions and compare research data. Moreover, in addition to teachers' views on the subject, it would be of research interest to examine students' views as well. After all, students are an integral part of the educational process and their views on the difficulties and strategies for managing the special month of May should also be considered. It would also be interesting to conduct similar research in the future to compare the results with those of the present study and to see if there are any changes in teachers' trends and assessments of the "special" month of May in the school unit.

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Evolution of Program Evaluation: A Historical Analysis of Leading Theorists' Views and Influences

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Abstract
Program evaluation has undergone significant evolution, shaped by diverse theoretical perspectives and influential scholars. This study provides a historical analysis of leading theorists' views and their impact on the field, tracing key developments from early accountability-focused models to contemporary, context-sensitive approaches. Beginning with foundational contributions from figures such as Tyler and Scriven, the analysis explores how theorists like Stake, Patton, and Stufflebeam have expanded the scope of evaluation through responsive, utilization-focused, and CIPP. The study highlights shifts from positivist, objective-oriented models to more participatory and stakeholder-centered frameworks, reflecting broader changes in educational and social science research paradigms. By examining the intellectual tradition and methodological shifts, this study provides insights into how program evaluation has adapted to evolving societal, institutional, and policy demands. Understanding these historical influences offers valuable perspectives for future advancements in evaluation practice and theory.

Keywords: Program Evaluation, Historical Analysis, Theorists, Evaluation Models

1. Introduction

Program evaluation is a systematic process of determining the merit, worth, and significance of a program by carefully examining its planning, implementation, and outcomes. It provides a structured approach to assess whether a program is achieving its intended goals, identifying areas for improvement, and making decisions about future program directions. Program evaluation can encompass a variety of methods and designs, tailored to the specific context and objectives of the evaluation. The field has evolved significantly, with various frameworks and methodologies developed to address diverse program needs. Patton (2008) defines program evaluation as "the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and inform decisions about future programming." This definition highlights the dual focus of program evaluation: learning for continuous improvement and accountability for decision-making. Moreover, Weiss (1998) emphasizes the importance of understanding the program's context, the stakeholders involved, and the broader societal impact. This perspective underscores the role of program evaluation in contributing to the knowledge base of effective practices, guiding policy formulation, and fostering accountability among program implementers and funders. Program evaluation serves as a critical tool for ensuring that programs are not only meeting their stated objectives but are also making a meaningful

impact in their respective fields. Through a thorough examination of processes and outcomes, program evaluation provides evidence-based insights that can drive the continuous improvement and sustainability of programs.

Program evaluation is vital in both educational and organizational settings as it ensures that programs are effective, efficient, and aligned with their intended goals. In educational settings, evaluation helps in assessing the impact of instructional methods, curricula, and educational policies on student outcomes. It allows educators and policymakers to make data-driven decisions, identify areas needing improvement, and implement evidence-based practices that enhance learning experiences (Fitzpatrick, Sanders, & Worthen, 2011). In organizational settings, program evaluation aids in determining the effectiveness of various interventions, training programs, and strategic initiatives. By systematically collecting and analyzing data, organizations can optimize resource allocation, improve program design, and enhance employee performance and satisfaction (Rossi, Lipsey, & Freeman, 2004). Overall, program evaluation is a crucial mechanism for accountability, continuous improvement, and the achievement of desired outcomes in both educational and organizational contexts.

Program evaluation has evolved significantly over time, shaped by the growing complexity of programs, advances in methodologies, and shifts in societal priorities. Program evaluation has been defined as “judging the worth or merit of something or the product of the process” (Scriven, 1991). Educators, decision-makers, politicians, and stakeholders aim to ensure that programs achieve their intended outcomes and assess their impacts effectively. To this end, institutions utilize program evaluation to examine their processes, procedures periodically. Program evaluation offers systematic processes and tools that educators and developers can use to gather valid, reliable, and credible data, enabling them to address a wide range of questions about program effectiveness (Wholey et al., 2007). Despite its critical importance, program evaluation has often been one of the most misunderstood, overlooked, and neglected phenomena by educators throughout history (Shrock, & Geis, 1999). This study aimed to present an overview of the historical evolution of program evaluation by highlighting significant periods. The goal was to provide students, educators, and practitioners with a concise summary of the field’s development, tracing its progress from the late 1700s to the 21st century. The growth and advancement of program evaluation underscore the importance of such an exploration. Additionally, the study identified five commonly used program evaluation approaches currently employed by practitioners. The researcher hopes that this enhanced understanding of program evaluation will help educators to reduce misconceptions surrounding it.

Because humans have informally utilized evaluation for thousands of years, tracing its exact historical development is challenging. Scriven (1996) remarked, "evaluation is a very young discipline although it is a very old practice. Madaus et al. (2000) identified seven key periods in the evolution of program evaluation: The Age of Reform (prior to 1900): Marked by initial efforts to bring systematic changes, especially in education and social programs. The Age of Efficiency (1900–1930): Focused on improving processes and productivity through evaluation methods. The Tylerian Age (1930–1945): Shaped by Ralph Tyler's emphasis on objective-based evaluation in education. The Age of Innocence (1946–1957): Characterized by the expansion of evaluation without a strong methodological framework. The Age of Development (1958–1972): A period of significant growth in evaluation methodologies and applications across various sectors. The Age of Professionalization (1973–1983): Marked by the establishment of professional organizations and ethical standards in evaluation. The Age of Expansion and Integration (1983–2000): Defined by the integration of evaluation practices across disciplines and the use of diverse methodologies. Since 2001, a new era has emerged, often referred to as The Age of AI and Educational Robotics, highlighting the role of technology, artificial intelligence, and robotics in advancing evaluation practices and educational outcomes.

1.1 Historical Overview of Program Evaluation

The early development of program evaluation emerged from a growing need to assess the effectiveness of social programs, educational reforms, and organizational initiatives. In the early 20th century, as public and private institutions expanded their efforts to address social issues, the demand for systematic methods to measure the impact of these programs increased. The roots of modern program evaluation can be traced back to the educational assessments conducted in the United States during the 1930s and 1940s, where researchers began to develop more structured approaches to evaluate educational interventions (Tyler, 1942). The need for evaluation became more

pronounced during the 1960s with the introduction of large-scale social programs under President Lyndon B. Johnson's "War on Poverty." The federal government required accountability and evidence of program effectiveness, leading to the formalization of evaluation as a distinct field of study (Scriven, 1967). This period marked a shift from informal assessments to rigorous, methodologically sound evaluations, highlighting the necessity of reliable data to inform policy decisions and improve program outcomes.

1.2 Key milestones in the history of program evaluation

1.2.1 Milestone 1: The Age of Reform (1792-1900's)

The first documented formal use of evaluation occurred in 1792 when William Farish introduced the quantitative marking system to assess students' performance (Hoskins, 1968). This method allowed for the objective ranking of examinees and the averaging and aggregation of scores. The quantitative mark was a pivotal development in the history of program evaluation for two key reasons: (a) it marked the beginning of psychometrics, and (b) it shifted the focus of assessments from rhetorical style to factual and technical competence in specific subject areas (Madaus & O'Dyer, 1999). The first formal educational evaluation in the United States took place in 1845 in Boston, Massachusetts. Printed tests in various subjects were employed to evaluate student achievement within the Boston education system. These tests facilitated comprehensive assessments, enabling the evaluation of a large school system's quality. This event was a milestone in the history of evaluation, initiating a tradition of using student test scores as a primary measure of school or instructional program effectiveness (Stufflebeam et al., 2000). Additionally, educational reformer Joseph Rice conducted a comparative study of spelling instruction across multiple school districts. His work is recognized as the first formal educational program evaluation in America (Stufflebeam et al., 2000), further cementing the foundational role of assessment in educational reform and program evaluation.

1.2.2 Milestone 2: The Age of Efficiency and Testing (1900-1930)

Fredrick W. Taylor's principles of scientific management significantly influenced educational administration. His approach emphasized observation, measurement, analysis, and, most importantly, efficiency (Russell & Taylor, 1998). Objective-based testing played a central role in assessing instructional quality. Departments dedicated to enhancing the efficiency of educational districts developed these tests, which were then used to evaluate the district's overall effectiveness. During this era, educators often equated measurement with evaluation, viewing the latter as the process of summarizing student test performance and assigning grades (Fitzpatrick et al., 2012).

1.2.3 Milestone 3: The Tylerian Age (1930-1945)

Ralph Tyler, often regarded as the father of educational evaluation, made significant contributions to the field. He led the Eight-Year Study (1932–1940), which compared outcomes from 15 progressive high schools and 15 traditional high schools. Tyler demonstrated that instructional objectives could be clarified by expressing them in behavioral terms, providing a foundation for evaluating instructional effectiveness (Tyler, 1975). He emphasized that each objective must be defined in terms that clarify the kind of behavior that the course should help to develop. Stufflebeam et al. (2000) noted that Tylerian evaluation involves internal comparisons of outcomes with objectives, eliminating the need for costly and disruptive comparisons between experimental and control groups, as seen in earlier studies like those conducted by Rice. Tyler's work laid the groundwork for criterion-referenced testing (Fitzpatrick et al., 2012).

1.2.4 Milestone 4: The Age of Innocence (1946-1957)

Starting in the mid-1940s, Americans began to move beyond the challenges of World War II and the Great Depression. According to Madaus and Stufflebeam (1984), this era marked a period of significant societal growth, characterized by the expansion and enhancement of educational programs, facilities, and personnel. During this time of national optimism, accountability for public funds spent on education received little attention, giving this evaluation period its distinctive label. By the early 1950s, Tyler's approach to evaluation had gained widespread

adoption. In 1956, Bloom and Krathwohl advanced objective-based testing with the publication of the *Taxonomy of Educational Objectives*. The taxonomy categorized learning outcomes within the cognitive domain, highlighting different types of learner behaviors and their hierarchical relationships. They emphasized that educational objectives could be classified by the type of behavior they described and that tests should be designed to measure each specific type of learning outcome (Reiser, 2001).

1.2.5 Milestone 5: The Age of Development (1958-1972)

In 1957, the successful launch of Sputnik I by the Soviet Union triggered a national crisis in the United States. This event prompted the passage of legislation aimed at improving instruction in fields deemed critical to national defense and security. As part of these efforts, curriculum development projects introduced new educational programs in mathematics, science, and foreign languages (Stufflebeam et al., 2000). Evaluations were funded to assess the effectiveness of these new curricula. In the early 1960s, the emergence of criterion-referenced testing marked another significant milestone in the evolution of evaluation. Previously, most tests were norm-referenced, designed to compare student performance against that of peers. In contrast, criterion-referenced tests focused on measuring an individual's performance against predefined criteria. These tests assessed how well a person could perform specific behaviors or tasks, independent of others' performance (Reiser, 2001).

1.2.6 Milestone 6: The Age of Professionalization (1973-1983)

During the 1970s, evaluation established itself as a distinct profession. Several influential journals were launched during this time, including *Educational Evaluation and Policy Analysis*, *Studies in Educational Evaluation*, *Evaluation Review*, *New Directions for Program Evaluation*, *Evaluation and Program Planning*, and *Evaluation News* (Stufflebeam et al., 2000). Additionally, universities began acknowledging the growing significance of evaluation by introducing courses focused on evaluation methodology.

1.2.7 Milestone 7: The Age of Expansion and Integration (1983-2000)

In the early 1980s, evaluation faced significant challenges due to widespread funding cuts and an increased emphasis on cost reduction. Weiss (1998) noted that funding for new social initiatives was drastically reduced during this period. However, by the early 1990s, as the economy improved, evaluation experienced a revival. The field expanded and became more integrated, marked by the establishment of professional associations and the development of evaluation standards. Notably, the Joint Committee on Standards for Educational Evaluation introduced criteria for personnel evaluation.

1.2.8 Milestone 8: The Age of AI and Educational Robotics (2000- present)

The integration of Artificial Intelligence (AI) and robotics into education has marked a transformative era, reshaping how teaching and learning occur. AI in education leverages machine learning, natural language processing, and adaptive algorithms to create personalized learning environments. Educational robotics, often used in conjunction with AI, introduces students to programming, engineering, and critical thinking skills through hands-on activities involving programmable machines. Together, they foster active engagement, problem-solving, and adaptability in students, equipping them for a technology-driven future(Luckin et al., 2016). Educational robotics combines hardware and software tools to teach STEM (science, technology, engineering, and mathematics) concepts. Students design, build, and program robots, fostering skills like coding, teamwork, and creativity (Eguchi,2014). By integrating AI and robotics, education is undergoing a paradigm shift that prepares students not only to interact with technology but to drive its future innovations. This synergy between advanced technologies and pedagogy underscores the importance of a forward-looking approach to education (Selwyn, 2019).

The purpose of this article is to explore the contributions of leading theorists and their impact on the evolution of program evaluation. By examining the foundational theories, models, and frameworks proposed by prominent figures in the field, the article aims to provide a comprehensive understanding of how program evaluation has

developed over time. It will highlight the key ideas introduced by these theorists, the methodologies they advocated, and how their work has shaped current evaluation practices. Furthermore, the article will discuss the practical implications of these theoretical contributions in educational and organizational settings, illustrating how they have influenced policy-making, program improvement, and accountability measures.

2. Method

This study employs a historical analysis approach to examine the evolution of program evaluation through the perspectives of leading theorists and the influences shaping their work. Historical analysis allows for a systematic investigation of past developments, tracing the intellectual, social, and methodological shifts in the field of program evaluation. By analyzing primary and secondary sources, this study reconstructs the historical trajectory and contextualizes the contributions of key figures in program evaluation (Berg & Lune, 2012; Bowen, 2009; Lundy, 2008; Tosh, 2015). Primary Sources: Original works, publications, and writings of influential theorists in program evaluation. This includes books, journal articles, conference proceedings, and reports where their theories and models were initially presented. Secondary Sources**:** Scholarly analyses, literature reviews, and critiques that interpret and contextualize the contributions of these theorists. These sources help in understanding how their ideas evolved over time and how they were received by the academic and professional community.

2.1 Data Collection and Analysis

The historical analysis follows a chronological and thematic approach, ensuring a comprehensive understanding of the evolution of program evaluation. Chronological Review traces the key developments in program evaluation from its early conceptualizations in the mid-20th century to contemporary advancements. While Thematic Categorization reveals the contributions of theorists based on dominant themes. Contextual Analysis examines the social, political, and technological influences that shaped these theorists' perspectives and the evolution of evaluation methodologies. Comparative Analysis compares different evaluation models to identify key similarities, differences, and paradigm shifts over time. By employing a historical analysis methodology, this study offers a structured examination of the evolution of program evaluation, highlighting the contributions of leading theorists and the broader contextual influences that have shaped the field over time. This approach provides a deeper understanding of how program evaluation has developed and informs future directions in evaluation research and practice.

2.2 Validity and Reliability

To ensure the credibility and reliability; a rigorous selection of peer-reviewed sources and seminal works is conducted. Multiple perspectives are incorporated to avoid historical bias and to provide a balanced interpretation of theoretical advancements. Cross-referencing is employed to verify the consistency of historical accounts and theoretical claims.

3. Theoretical Framework

Evaluation Tree Model is a conceptual framework that categorizes different approaches to program evaluation. It visually represents how various evaluation theories and models have developed over time, organizing them into distinct branches based on their philosophical orientations and methodological focuses. In evaluation theory tree model in Figure 1 which depicted the trunk and the three primary branches of evaluation tree. The trunk has supported the development of the field in different ways. Model is metaphorically structured like a tree, with roots, a trunk, and three main branches. Roots represent the foundational theories and principles that have shaped the field of evaluation. They draw from social science research, accountability, and systematic inquiry. Trunk represents the central purpose of evaluation determining the merit, worth, and significance of programs.

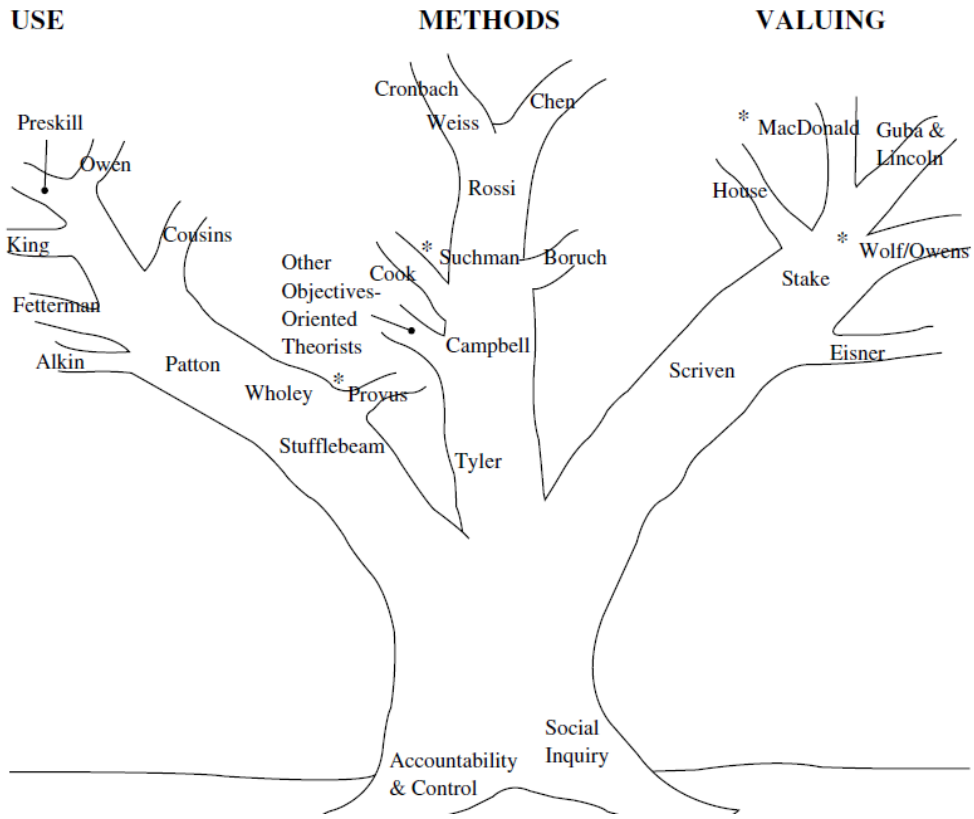

Figure 1: Evaluation Theory Tree Model

Source: Alkin, M.C. (2013). Evaluation Roots a Wider Perspective of Theorists' Views and Influences. 2nd Edition. SAGE.University of California, Los Angeles.

One of the primary branch is 'use branch 'of model focuses on ensuring that evaluations are useful and actionable for stakeholders. It associated with Michael Scriven and Michael Quinn Patton. Examples of which developmental evaluation, participatory evaluation. In essence, work done by theorists in this branch expresses a concern for the way in which evaluation information will be used and focuses on those who will use the information. Second branch is 'methods branch' of the model emphasizes rigorous research methods and validity in evaluation. Linked to scholars like Rolf W. Tyler and Donald Campbell. Examples of which are experimental and quasi-experimental designs. This branch is the evaluation as research, or evaluation guided by research methods, it has designated *methods* since in its purest form, it deals with obtaining generalizability, or knowledge construction. Third branch is 'valuing branch' focuses on making explicit value judgments about programs. Tied to Egon Guba, Robert Stake, and Daniel Stufflebeam. Examples of which CIPP Model, Responsive Evaluation. The *valuing* branch. Initially inspired by the work of Michael Scriven and Elliot Eisner the valuing branch firmly establishes the vital role of the evaluator in valuing. Those in this branch maintain that placing value on data is perhaps the most essential component of the evaluator's work. The tree metaphor illustrates how evaluation has evolved, with various branches developing from a shared foundation. The model helps evaluators understand different perspectives and choose appropriate approaches based on the evaluation's purpose and audience. It integrates both methodological rigor and practical utility, bridging the gap between research and real-world application.

3.1 Major Theorists and Their Contributions

3.1.1 Ralph W. Tyler

The Tylerian approach, developed by Ralph W. Tyler in the early 20th century, is one of the foundational models of program evaluation, focusing on the alignment of educational objectives with outcomes. This approach, often referred to as objectives-based evaluation, emphasizes the importance of clearly defined goals and the systematic assessment of whether these goals are achieved. Tyler introduced this model through his work on the *Eight-Year*

Study (1933-1941), where he developed a framework to evaluate the effectiveness of educational curricula by measuring student outcomes against predefined objectives. He proposed that evaluation should begin by identifying the intended outcomes of a program and then systematically collecting data to determine whether these outcomes were achieved (Tyler, 1949).

The Tylerian approach involves four key steps:

1. Defining clear educational objectives.
2. Developing or selecting methods to measure the achievement of these objectives.
3. Collecting data on student performance.
4. Using the data to make judgments about the effectiveness of the program and to guide improvements.

This approach laid the groundwork for subsequent evaluation models by emphasizing the importance of setting specific, measurable objectives and using data to inform decision-making. It has been widely adopted in both educational and organizational settings for its structured and outcome-oriented nature. Ralph W. Tyler's objectives-based evaluation had a profound influence on both curriculum development and educational evaluation. His approach emphasized the necessity of aligning instructional goals with outcomes, a principle that became central to curriculum design. Tyler's model, often referred to as the "Tyler Rationale," provided a systematic framework for educators to develop curricula that are goal-oriented and focused on measurable outcomes (Tyler, 1949).

In curriculum development, Tyler's influence is evident in the widespread adoption of his four fundamental questions:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained?

These questions guide curriculum developers in designing programs that are coherent, purposeful, and capable of being evaluated. Tyler's emphasis on clear objectives and outcomes helped to shift educational practices toward a more structured and systematic approach, allowing for better assessment of student learning and program effectiveness. In educational evaluation, Tyler's approach laid the groundwork for subsequent evaluation models that prioritize outcomes and accountability. His focus on measurable objectives and data-driven decision-making has influenced the development of standardized testing, performance assessments, and various accountability frameworks in education. The emphasis on aligning teaching, learning, and assessment with specified objectives continues to be a cornerstone of modern educational practices.

3.1.2 Michael Scriven

Michael Scriven made significant contributions to the field of program evaluation by introducing the concepts of formative and summative evaluation, which have become fundamental in educational and organizational contexts. *Formative Evaluation***:** Scriven (1967) defined formative evaluation as the process of gathering data during the development or implementation of a program to improve its design and performance. The primary goal of formative evaluation is to provide feedback that can be used for continuous improvement. It focuses on identifying strengths and weaknesses, offering insights into how a program can be modified to better achieve its objectives. Formative evaluation is typically used by program developers, implementers, and other stakeholders involved in the ongoing operation of a program.

*Summative Evaluation***:** Summative evaluation, on the other hand, occurs after a program has been fully implemented and aims to assess its overall effectiveness and impact. Scriven described summative evaluation as judgmental, focusing on determining the value or worth of a program, often for the purpose of decision-making about its continuation, replication, or scaling. Summative evaluation provides a comprehensive assessment of whether the program achieved its intended outcomes and informs decisions about future investments or modifications.

Scriven's distinction between formative and summative evaluation has influenced a wide range of evaluation practices, helping educators and policymakers understand when and how to apply different types of evaluation to maximize program success and accountability. Michael Scriven emphasized the importance of evaluator independence as a critical factor in ensuring the credibility, objectivity, and integrity of evaluation findings. Independent evaluators are free from conflicts of interest and external pressures that could influence their judgments or the evaluation process. This independence is vital for maintaining the trust of stakeholders and ensuring that the evaluation results are unbiased and reliable.

1. *Objectivity and Credibility***:** Independent evaluators can provide objective assessments because they are not influenced by the interests of program sponsors, implementers, or other stakeholders. This objectivity enhances the credibility of the evaluation findings, making them more likely to be accepted and used by decision-makers (Scriven, 1991).
2. *Avoiding Conflicts of Interest***:** When evaluators are closely tied to the program they are evaluating, there is a risk of conflicts of interest that can compromise the evaluation's integrity. Independence helps prevent situations where evaluators might feel pressured to produce favorable results to satisfy stakeholders, thereby ensuring that the evaluation accurately reflects the program's performance.
3. *Ensuring Ethical Standards***:** Independent evaluation supports adherence to ethical standards, as evaluators are more likely to uphold principles of honesty, transparency, and fairness without undue influence. This is essential for protecting the interests of all parties involved, including program participants and funders.
4. *Facilitating Honest Feedback***:** Independent evaluators can provide honest, constructive feedback that is crucial for program improvement. Their detachment from the program allows them to identify issues and recommend changes without fear of retribution or negative repercussions.

Scriven's advocacy for evaluator independence underscores its role in enhancing the validity and utility of evaluation findings, ultimately contributing to more effective and accountable programs.

3.1.3 Daniel Stufflebeam

Daniel Stufflebeam’s CIPP model is one of the most influential frameworks in the field of program evaluation, offering a comprehensive approach to evaluating programs from multiple perspectives. Developed in the 1960s, the CIPP model focuses on four key areas: Context, Input, Process, and Product, which together provide a holistic evaluation of a program's effectiveness and areas for improvement.

1. *Context Evaluation***:** Context evaluation involves assessing the needs, problems, and opportunities that the program is designed to address. This step is focused on understanding the broader context in which the program operates, including the target audience, societal issues, and specific challenges. By identifying the context, evaluators can determine whether the program aligns with the needs of the community or population it serves. This stage helps in defining clear objectives and ensuring that the program is relevant and appropriate.
2. *Input Evaluation***:** Input evaluation examines the resources, strategies, and plans necessary to implement the program. It focuses on the feasibility and adequacy of the resources, including funding, staff, materials, and technology. Input evaluation also looks at the planning process, assessing whether the strategies proposed are effective for achieving the program’s goals. This step is critical for ensuring that the program is set up with the necessary support and infrastructure to succeed.
3. *Process Evaluation***:** Process evaluation assesses the implementation of the program itself. It monitors how the program is being executed, whether it follows the established plan, and how well the program is being delivered. This includes evaluating the fidelity of implementation, the quality of interactions, and any challenges faced during execution. Process evaluation is dynamic and ongoing, providing feedback to adjust and improve the program in real-time.
4. *Product Evaluation***:** Product evaluation measures the outcomes and impacts of the program. It focuses on whether the program achieved its intended goals and the extent of its effectiveness in producing the desired results. This stage includes both short-term and long-term outcomes and may involve assessing the sustainability of the program's impacts. Product evaluation provides the final judgment on the program’s success and informs decisions about its continuation or replication.

The CIPP model is particularly valuable for its comprehensive approach, as it provides a framework for evaluating a program throughout its lifecycle—from planning and implementation to final outcomes. By examining context, input, process, and product, the model encourages a continuous cycle of feedback and improvement, promoting more effective and accountable programs. The CIPP (Context, Input, Process, Product) model, developed by Daniel Stufflebeam, is widely used in a variety of settings, from education and social programs to health interventions and organizational development. Its comprehensive approach to evaluation makes it a versatile tool for assessing the effectiveness of programs and guiding their improvement. Below are practical applications of the CIPP model in different settings: The CIPP model's adaptability across diverse settings makes it an invaluable tool for continuous program improvement and assessment. By evaluating context, input, process, and product, the model allows for a thorough examination of a program's development, implementation, and outcomes, offering stakeholders actionable insights for future decisions.

3.1.4 Robert Stake

Robert Stake's Responsive Evaluation Model focuses on understanding the program from the perspective of its stakeholders, emphasizing the importance of involving them throughout the evaluation process. Unlike more traditional models, which are often based on predetermined objectives, Stake's approach is flexible, context-sensitive, and adaptive. This model encourages evaluators to engage with stakeholders—such as program participants, staff, and the community—to understand their needs, experiences, and values. The evaluator's role is to interpret these perspectives and offer insights that are meaningful and relevant to those involved in the program. The model employs qualitative methods like interviews and observations to capture rich, descriptive data, rather than focusing solely on objective, measurable outcomes. As such, it is particularly useful in evaluating complex programs where the processes and meanings are just as important as the outcomes. The responsive evaluation model promotes a more holistic and inclusive evaluation, ensuring that all voices are heard and considered in the assessment. In his seminal work, Robert Stake introduced the concept of "countenance" in the context of program evaluation, as discussed in his 1975 paper *The Countenance of Evaluation*. The term "countenance" in this context refers to the overall face or character of an evaluation, encompassing its nature, purpose, and the criteria by which it should be judged. Stake used the term to suggest that an evaluation has an identity or a "face" that reflects the values, concerns, and perspectives of the various stakeholders involved. It is the evaluator's job to understand and convey the essence of this face, which is shaped by the context in which the program operates and the meanings that stakeholders attach to the program. The countenance of evaluation involves understanding the evaluation's purpose (why it is being done), the process (how the evaluation is carried out), and the outcomes (what results or findings emerge). For Stake, this concept emphasized that evaluations should not be conducted in isolation, and they should consider the perspectives of all relevant participants (e.g., program staff, participants, community members) in shaping both the evaluation design and its interpretation. Thus, the countenance of evaluation highlights the importance of recognizing and engaging with the subjective and contextual aspects of a program. In essence, Stake's idea of countenance promotes a holistic, responsive, and stakeholder-inclusive approach to evaluation. It challenges evaluators to go beyond just objective data and consider the broader, more subjective dimensions of the program, reflecting the multiple realities and experiences of those involved**.**

3.1.5 Lee Cronbach

Lee Cronbach's contribution to decision-oriented evaluation is foundational, particularly through his work on "The Evaluation of Educational Programs" and the development of evaluation theory that centers on the use of evaluation for decision-making. Cronbach emphasized the importance of making evaluation relevant and practical for stakeholders involved in program design and implementation. His approach focused on ensuring that evaluations were not just academic exercises but tools that could be used to inform decisions about program improvements, resource allocation, or policy changes. A key aspect of Cronbach's perspective was his focus on the context of evaluation. He argued that decision-oriented evaluation should take into account the real-world conditions, goals, and constraints of the programs being evaluated. This approach encourages evaluators to collaborate closely with stakeholders to define the criteria for success and determine what decisions need to be informed by the evaluation process. He also advocated for evaluations that are continuous and iterative, so that decisions can be made at various stages of program implementation based on ongoing evidence. Cronbach's work

further contributed to the idea that evaluations should not be confined to the measurement of outcomes but should also explore the processes that influence those outcomes, providing a more comprehensive understanding that aids in decision-making. This made his work influential in the development of formative evaluation—a type of decision-oriented evaluation focused on improving a program while it is still in progress, rather than waiting until the program is completed. By advocating for evaluations that are useful, adaptable, and focused on guiding decisions, Cronbach's contributions helped bridge the gap between theory and practice, ensuring that evaluation processes directly served the needs of decision-makers in educational and organizational settings. Lee Cronbach's approach to evaluation emphasized the importance of adaptability and contextual analysis in decision-oriented evaluation. He argued that evaluations should be responsive to the unique context in which a program operates, acknowledging that each educational or organizational setting is different. This focus on contextual analysis involves understanding the program's goals, the needs of its participants, the cultural and social environment, and the resources available for its implementation. Cronbach highlighted that a one-size-fits-all approach to evaluation is not effective; instead, evaluators must adapt their methods, criteria, and strategies to align with the specific circumstances of the program being evaluated. This adaptability ensures that the evaluation remains relevant and useful to stakeholders throughout the process. By considering the dynamic and evolving nature of the program's context, Cronbach's model supports continuous improvement, allowing evaluations to provide actionable insights that are tailored to the real-world needs of decision-makers.

3.1.6 Egon Guba and Yvonna Lincoln

Egon Guba and Yvonna Lincoln significantly contributed to the field of evaluation through their development of naturalistic evaluation and fourth-generation evaluation. Their work, particularly in the 1980s and 1990s, challenged traditional evaluation methods that emphasized objectivity, standardization, and quantitative measurements. Guba and Lincoln proposed naturalistic evaluation as an alternative approach, which focuses on understanding programs in their natural context, considering the perspectives and experiences of participants, and recognizing the subjective nature of reality. This approach values qualitative data and emphasizes the importance of human experiences, social dynamics, and the complex, evolving context in which programs operate. Their fourth-generation evaluation further developed this perspective, emphasizing constructivist methods where the evaluation process itself becomes an interactive, collaborative inquiry among stakeholders. In this model, evaluators work closely with stakeholders—such as program participants, staff, and community members—to negotiate and interpret the findings together. The goal is to produce an evaluation that is meaningful and relevant to those directly involved in the program. The fourth-generation approach is characterized by its emphasis on consensus-building, participatory processes, and emergent findings, where stakeholders are co-creators of knowledge rather than passive recipients of evaluator-imposed conclusions. Guba and Lincoln's contributions to evaluation highlight the need for flexibility, collaboration, and contextual understanding, positioning their approach as a valuable tool in complex, community-based, and educational settings. Paradigm shifts in evaluation methodologies have been marked by a transition from quantitative, objective methods to qualitative, context-sensitive approaches, reflecting a broader understanding of the complexity of social programs and educational settings. Early evaluations were grounded in positivist traditions, which emphasized the use of standardized tools and objective measurement, as seen in Tyler's objectives-based evaluation. However, the limitations of such approaches led to the rise of naturalistic and participatory evaluation models, such as those proposed by Guba and Lincoln, which emphasize the importance of context, subjectivity, and stakeholder involvement. The shift towards constructivist paradigms and models like Responsive Evaluation (Stake) and the CIPP Model (Stufflebeam) highlights a focus on understanding the processes, not just the outcomes, of a program. These changes reflect a broader movement in evaluation that recognizes the need for flexibility, adaptability, and the involvement of stakeholders in co-constructing meaning, ensuring evaluations are not only rigorous but also relevant and actionable for decision-making. Such paradigm shifts have redefined the role of the evaluator, positioning them as active participants in the evaluation process rather than detached observers.

3.1.7 Theoretical and Practical Impacts

The evolution of program evaluation has been profoundly shaped by leading theorists whose contributions have bridged theoretical constructs and practical applications. Michael Scriven emphasized the importance of judging

the worth or merit of programs, laying a foundational definition for the field. Marvin C. Alkin introduced the "evaluation theory tree," categorizing various evaluation approaches and highlighting the interplay between methods and values. Michael Patton developed "Developmental Evaluation," advocating for evaluators to actively participate in organizational decision-making to facilitate continuous improvement. These theorists, among others, have significantly influenced the methodologies and practices of program evaluation, ensuring that it remains a dynamic and responsive discipline. Bridging the gap between theoretical frameworks and practical applications in program evaluation is essential for developing effective and impactful programs. A robust program theory, often represented as a logic model, delineates the assumed causal pathways through which program activities are expected to lead to desired outcomes. Assessing this theory involves evaluating its plausibility, feasibility, and testability to ensure it aligns with the needs of the target population and is grounded in empirical evidence. Incorporating stakeholder perspectives during this process enhances the relevance and applicability of the evaluation. By systematically linking theoretical constructs to practical execution, evaluators can identify potential gaps and unintended consequences, thereby refining program design and increasing the likelihood of achieving intended impacts (Nagel, 1990). The integration of qualitative and quantitative methods in program evaluation enriches the analysis by providing a comprehensive understanding of program processes and outcomes. Qualitative methods offer in-depth insights into participant experiences and contextual factors, while quantitative methods contribute statistical rigor and generalizability. Combining these approaches allows evaluators to cross-validate findings and address complex evaluation questions more effectively. For instance, qualitative data can explain the 'why' and 'how' behind quantitative trends, leading to more nuanced interpretations. This methodological pluralism enhances the credibility and utility of evaluation findings, facilitating informed decision-making and program improvement (Rao & Walcock, 2011). Establishing ethical guidelines and standards in program evaluation is crucial to protect the rights and well-being of participants and to maintain the integrity of the evaluation process. Ethical considerations encompass obtaining informed consent, ensuring confidentiality, and minimizing potential harm. Professional organizations, such as the American Evaluation Association, have developed guiding principles that emphasize systematic inquiry, competence, integrity, respect for people, and responsibilities for the general and public welfare. Adhering to these ethical standards fosters trust among stakeholders and enhances the credibility and legitimacy of evaluation findings (AEA, 1994).

3.1.8 Evolution of Evaluation Paradigms

The evolution of evaluation paradigms has seen a significant shift from traditional, externally driven assessments to more participatory and empowerment-focused approaches. Traditional evaluations often positioned evaluators as external experts who assessed programs with minimal input from stakeholders. In contrast, participatory evaluation actively involves program stakeholders—including staff, participants, and community members in the evaluation process, fostering a sense of ownership and ensuring that the evaluation reflects diverse perspectives. Empowerment evaluation extends this concept by equipping groups with the tools and knowledge to monitor and evaluate their own performance, thereby enhancing their capacity for self-assessment and continuous improvement. This approach not only democratizes the evaluation process but also aligns it more closely with the needs and contexts of the communities served. The evolution of evaluation paradigms has seen a significant shift from traditional, externally driven assessments to more participatory and empowerment-focused approaches. Traditional evaluations often positioned evaluators as external experts who assessed programs with minimal input from stakeholders. In contrast, participatory evaluation actively involves program stakeholders—including staff, participants, and community members—in the evaluation process, fostering a sense of ownership and ensuring that the evaluation reflects diverse perspectives. Empowerment evaluation extends this concept by equipping groups with the tools and knowledge to monitor and evaluate their own performance, thereby enhancing their capacity for self-assessment and continuous improvement. This approach not only democratizes the evaluation process but also aligns it more closely with the needs and contexts of the communities served (Fetterman, 1994). The integration of technology and digital tools has transformed modern program evaluation, offering new avenues for data collection, analysis, and dissemination. Digital platforms facilitate real-time data gathering, enabling evaluators to monitor program implementation and outcomes more efficiently. Advanced analytical software allows for sophisticated data analysis, enhancing the accuracy and depth of evaluation findings. Moreover, technology supports interactive and collaborative evaluation processes, enabling stakeholders to engage with data and findings through user-friendly interfaces. The adoption of these digital tools not only increases the efficiency

of evaluations but also enhances their relevance and accessibility to diverse audiences (Jamieson & Azzam, 2012). Contemporary evaluation practices are increasingly embracing culturally responsive and inclusive methodologies to ensure that evaluations are equitable and contextually relevant. Culturally responsive evaluation (CRE) involves aligning evaluation efforts with the cultural values, beliefs, and contexts of the program and its participants. This approach acknowledges the influence of culture on program implementation and outcomes, striving to design and select assessments that promote equity. By incorporating diverse cultural perspectives, CRE enhances the validity and utility of evaluation findings, ensuring that they accurately reflect the experiences and needs of all stakeholders involved (Hood et al., 2016).

4. Discussion

Early program evaluation models, such as the objectives-oriented approach, primarily focused on assessing whether predefined goals were achieved. While this method provided a straightforward framework, it often failed to account for the complexities and contextual factors influencing program outcomes. For instance, the objectives-oriented model's effectiveness heavily depended on the clarity and stability of the program's objectives; ambiguous or evolving goals posed significant challenges for evaluators. Additionally, these traditional models tended to overlook the perspectives of program participants and stakeholders, leading to evaluations that lacked depth and relevance. As a result, the need for more comprehensive and adaptable evaluation approaches became increasingly apparent. Incorporating diversity, equity, and inclusion principles into program evaluation is essential to mitigate biases and promote fairness. Grounding an evaluation in diversity, equity, and inclusion means the evaluation is equity-focused, culturally responsive, and participatory. This approach examines structural and systemic barriers that create and sustain oppression, ensuring that evaluations do not perpetuate existing inequities. By engaging stakeholders from diverse backgrounds throughout the evaluation process, evaluators can identify and address potential biases, leading to more accurate and equitable outcomes. Adapting program evaluations to diverse and complex contexts presents several challenges, including the need to tailor interventions to specific cultural and organizational settings. Factors such as language barriers, varying levels of development, and differences in values and beliefs must be taken into consideration when designing and implementing evaluations. Additionally, the dynamic nature of complex interventions requires evaluators to be flexible and responsive to changing circumstances, which can complicate the evaluation process. Developing contextually appropriate evaluation strategies is crucial for obtaining valid and actionable insights in such settings. Program evaluation is undergoing significant transformations, driven by technological advancements and evolving methodologies. The increased use of technology, such as real-time data collection and mobile applications, is revolutionizing how data is gathered, analyzed, and utilized. These tools enhance the efficiency and accuracy of evaluations, enabling more timely and informed decision-making. Additionally, there is a growing emphasis on stakeholder engagement throughout the evaluation process, ensuring that diverse perspectives are considered and that evaluations are more inclusive and representative. This shift reflects a broader trend towards participatory approaches that value the insights and experiences of all program participants. The complexity of contemporary programs necessitates interdisciplinary approaches to evaluation, integrating knowledge and methods from multiple disciplines to address multifaceted issues comprehensively. Evaluating interdisciplinary research, however, presents unique challenges, including the need for appropriate criteria that fairly assess the integration of diverse disciplinary perspectives. Developing robust frameworks for such evaluations is crucial to ensure that interdisciplinary initiatives are effectively appraised and that their outcomes are accurately understood. Artificial intelligence (AI) and data analytics are poised to significantly influence the future of program evaluation. AI can enhance data analysis by processing large datasets efficiently, identifying patterns or trends that might be overlooked by human analysts, and supporting the development of predictive models. For example, AI algorithms can analyze complex data sets from evaluations, surveys, or other sources, enabling more robust and insightful conclusions. Additionally, AI can assist in drafting survey questionnaires or interview protocols, and even in testing and refining data collection tools, thereby streamlining the evaluation process. However, the integration of AI into evaluation also raises important considerations regarding ethics, data privacy, and the need for evaluators to develop new competencies to effectively leverage these Technologies (Jacob, 2024).

The evolution of program evaluation has been profoundly shaped by the contributions of leading theorists who introduced foundational models and frameworks. Early approaches, such as the objectives-oriented model,

provided structured methods for assessing program effectiveness. Over time, theorists like Michael Scriven, with his goal-free evaluation, and Daniel Stufflebeam, who developed the CIPP (Context, Input, Process, Product) model, expanded the scope of evaluation to consider broader contextual factors and stakeholder needs. These theoretical advancements have led to more comprehensive and adaptable evaluation practices. As the field continues to evolve, it is imperative to build upon these foundational theories, integrating innovative methodologies and inclusive practices to address the complexities of contemporary programs and diverse populations. Program evaluation has evolved significantly since its inception, transitioning from traditional, objectives-oriented models to more comprehensive and participatory approaches. Initially, evaluations focused primarily on assessing whether specific program goals were achieved, often neglecting the broader context and stakeholder perspectives. Over time, the field has embraced methodologies that consider the complexities of program implementation, including the integration of qualitative and quantitative methods, culturally responsive evaluations, and the incorporation of stakeholder feedback throughout the evaluation process. This evolution reflects a growing recognition of the need for evaluations to be adaptable, inclusive, and contextually relevant. The foundational contributions of early theorists continue to influence contemporary evaluation practices. Models such as the Context, Input, Process, Product (CIPP) framework and the Logic Model have provided structured approaches to evaluation, guiding evaluators in systematically assessing various program components. These theoretical frameworks have been instrumental in shaping the methodologies and practices that define the field today, offering evaluators tools to design and implement effective evaluations across diverse contexts. As the field of program evaluation continues to evolve, there is a pressing need for innovative and inclusive practices that address emerging challenges. The integration of technology, such as artificial intelligence and data analytics, offers new opportunities for enhancing the efficiency and depth of evaluations. However, it is crucial to ensure that these advancements are implemented in ways that promote equity and inclusivity, actively engaging diverse stakeholders and considering cultural contexts. By embracing innovative methodologies and prioritizing inclusivity, evaluators can contribute to more effective and equitable program outcomes.

This study adheres to ethical research practices by properly citing all sources and ensuring an objective, unbiased representation of theorists' contributions. The analysis respects intellectual property and acknowledges the historical and academic context in which these ideas were developed.

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The Effects of Plyometric Training Program on Leg Muscle Power of Basketball Players at Guangxi Polytechnic of Construction

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Abstract
This research aimed to develop and compare the effects of a plyometric training program on the leg muscle power of basketball players. The sample group consisted of 30 basketball players from Guangxi Polytechnic of Construction in Guangxi Province, China, selected through purposive sampling. The participants were divided into two groups: an experimental group of 15 players who trained using a plyometric program developed by the researcher and a control group of 15 players who trained using a standard training program. The training lasted for eight weeks, with sessions conducted three days a week, lasting 40 to 50 minutes per session. The Vertical Jump Test measured leg muscle power. Data were analyzed by calculating the mean and standard deviation. The Wilcoxon Signed Ranks Test was used to compare mean differences in leg muscle power within the control and experimental groups before and after training. Moreover, the Mann-Whitney U Test compared mean differences in leg muscle power between the control and experimental groups before and after training. The research results indicated that the plyometric program developed by the researcher was effective. The experimental group exhibited significantly better leg muscle power than the control group, with statistical significance at the 0.05 level. Additionally, both the experimental and control groups experienced substantial improvements in leg muscle power after training compared to before training, also with statistical significance at the 0.05 level. These findings indicate that the plyometric program developed is a valuable resource for enhancing agility and leg muscle power in basketball players. It offers practical guidelines for athletes, trainers, and anyone interested in basketball to improve athletic performance in the future.

Keywords: Plyometric Training Program, Leg Muscle Power, Basketball Players

1. Introduction

Basketball originated in the United States and was invented by a Canadian named James Naismith. At the time, he was working at the YMCA International Training School in Springfield, Massachusetts (now Springfield College). During the winter in Massachusetts, snowfall typically begins in November, making outdoor sports impossible. Meanwhile, the only indoor activity available in the gymnasium was the gymnastics equipment, which made students feel bored and uninspired. Wanting to create a team sport that could be played indoors and engage

students' interest, Naismith sought to develop a game that would bring joy and excitement to everyone. (Chen, 2007)

However, to enjoy and have fun playing basketball, it is essential to have good physical fitness, including muscle strength and endurance, flexibility, and the endurance of the circulatory and respiratory systems. In particular, leg muscle power is critical and necessary, as basketball requires muscle strength for jumping to score points. Physical fitness refers to the body's ability to function efficiently and includes various physiological capabilities that help protect individuals from diseases caused by a lack of exercise. It is considered a key factor or indicator of good health. These abilities can be improved, developed, and maintained through regular exercise. (Tulyakul, 2020; Zhou, 2013; Zhang, 2005)

As a result, it has been found that muscular power is a crucial and essential component of physical fitness for basketball players. Scoring in basketball requires jumping, enabling players to reduce the distance of the ball between themselves and the hoop, making scoring easier. The higher a player can jump, the greater their chances of successfully making a basket, as the height from the court to the basketball hoop is 3.05 meters. Moreover, strong muscular power enhances a player's overall movement efficiency. Whether moving in a straight line or multiple directions, speed and agility are key factors, both of which rely on muscular power as a fundamental component. Additionally, in a basketball game, every action demands muscle energy. When muscle energy consumption reaches high levels, an athlete's concentration and accuracy decline, affecting their performance and disrupting their body's balance. Therefore, basketball players must maintain an optimal level of muscular power to sustain their physical fitness, stay focused during the game, and ensure efficient coordination of all body movements. Players with well-developed muscular power can demonstrate better balance, agility, and skill execution, which are essential for technical performance in basketball. As a result, muscular power training has become an indispensable part of basketball training and should be incorporated into regular basketball practice. Basketball coaches should understand the principles of muscle power training and apply scientific methods to enhance their players' muscular strength and performance. (Popular Sports, 2022)

This study focuses on leg muscle power, directly affecting an athlete's speed, strength, and jumping ability. There are many methods for improving leg muscle power. Colson et al. (2010) conducted a study on the effects of vibration training on basketball players' jumping ability. The study involved an experimental group using vibration training and a control group, conducted over eight weeks. Pre and post-experiment jump tests showed that the experimental group had significantly improved muscle power and initial jump speed compared to the control group. Similarly, PK (2024) investigated holistic training methods to enhance leg muscle power in sprinters. The study divided athletes into two groups: Single-leg jump training group and Two-leg jump training group. The results showed that both training methods effectively enhanced muscle power in sprinters. Additionally, studies by Peng and Bi (2000); De Vos et al. (2005) explored weightlifting-based training, which also proved effective in increasing muscular power.

Plyometric training is among the most popular methods for developing muscular power among various training techniques. This approach emphasizes explosive movements and requires proper techniques to prevent injuries and maintain motivation. Key considerations include: 1. Avoiding excessive repetition of a single exercise for too long can lead to boredom and long-term injuries. 2. Incorporating station-based training to keep workouts engaging. 3. Gradually increasing intensity, such as raising the height of jump boxes or increasing repetitions. Typically, plyometric jump box heights range from 20 cm to 1.1 meters, depending on an athlete's age and fitness level. The duration of training must also be adjusted accordingly. Additionally, athletes' individual physiological and fitness differences must be taken into account—especially muscle strength, which serves as the foundation for plyometric training. If an athlete lacks sufficient base strength, plyometric training may result in injuries rather than improvements. The specific characteristics of basketball should also be considered. (Shi et al., 2024)

In China, basketball is extremely popular and may even be the most favored sport in certain provinces. One of the key reasons for its popularity is the presence of Yao Ming, a highly renowned basketball player who competed professionally in the NBA. His success has contributed significantly to the widespread admiration for basketball in China. As a result, basketball tournaments are held at all levels across the country, including school,

college/university, provincial, and national levels. Similarly, Guangxi Polytechnic of Construction has a basketball team preparing for the University Championship. However, past performances have been unsatisfactory, and the team has yet to secure a gold medal. According to an analysis conducted by the coaching staff, one of the key weaknesses among the players is insufficient leg muscle power. Players struggle to jump high enough to score effectively when facing physical contact with opponents or playing multiple consecutive games. This issue aligns with physical fitness assessments, particularly the Vertical Jump Test, which has revealed that most players have low to moderate muscle power levels. Additionally, the current training programs for the basketball team do not focus specifically on developing muscle power, leading to slow progress and minimal improvements in this area.

Considering these challenges, the researcher, who serves as both a basketball coach and instructor at Guangxi Polytechnic of Construction, aims to develop a plyometric training program designed to improve leg muscle power. The objective is to boost the athletic performance of basketball players, making them more effective on the court.

1.1. Research objectives

1. To develop a plyometric training program on the leg muscle power of basketball players
2. To compare the leg muscle power within a plyometric training program created by the researcher group and a regular training program group between before and after 8 weeks of training.
3. To compare the leg muscle power after 8 weeks of training between a plyometric training program created by the researcher and a regular training program

2. Research methods

This research is experimental. The researcher conducted the study using the Pretest Posttest Control Group Design (Gall, Borg, and Gall, 1996). The group involved in this research consisted of 30 male basketball players from Guangxi Polytechnic of Construction in Guangxi Province, China, who were selected through purposive sampling. The participants in this study were required to train for eight weeks, three days a week, specifically on Monday, Wednesday, and Friday, for 40-50 minutes each day.

2.1 Methods for Dividing Sample Groups

1. 46 male basketball players from Guangxi Polytechnic of Construction are in Guangxi Province, China.
2. Test leg muscle power by the Vertical Jump Test (Mackenzie, 2007) in all participants.
3. Arrange the leg muscle power values from the highest to the lowest of all participants.
4. Then, the 1st to 16th were deleted to the sample group due to their having high leg muscle power.
5. Handle the matching method and divide the sample into groups of 15 people each (even numbers and odd numbers). This method ensured that the two groups had no different or similar abilities before training.
6. Analyze the data of both groups before the training using the statistics Mann Whitney U-Test (Srisa-at, 1995).
7. Randomize the two groups of samples to create the experimental group and the control group by drawing lots. It seems that the even-numbered group was trained using the regular training program, while the odd-numbered group underwent a plyometric training program developed by the researchers.

Data analysis: The researcher analyzed the obtained data using a computer program as follows:

1. Statistical analysis to find the Mean and Standard deviation of the control group and experimental group
2. Compare the differences in leg muscle power training results within the control and experimental groups before and after eight weeks of training using the Wilcoxon Signed–Rank Test statistics.

3. Compare the differences in leg muscle power training results between the control and experimental groups after eight weeks of training using Mann – Whitney U-test statistics.

3. Research results

1. Develop a plyometric training program that affects the leg muscle power of basketball players. Five experts assessed the plyometric training program's quality to determine its suitability using the Index of Item-Objective Congruence (IOC) method. The program, which trains the leg muscles of male basketball players at Guangxi Polytechnic of Construction in Guangxi Province, China, had an IOC value ranging from 0.80 to 1.00, which was appropriate and usable.

2. A comparison of the differences in leg muscle power results within the control group and the experimental group before and after eight weeks of training. The study found that the leg muscle power of basketball players in the experimental group after eight weeks of training was significantly better than before training at the .05 level. Similarly, the leg muscle power of basketball players in the control group after eight weeks of training also showed significant improvement compared to before training at the .05 level, as shown in Table 1 - Table 2.

Table 1: Differences in leg muscle power results within the control group before training and after 8 weeks of training.

Period of training	**N**	**Control group**			
		Mean	**SD.**	**Z**	***P***
Before training (C_1)	15	49.13	4.80	-3.460	0.01*
After training (C_2)	15	50.93	4.44		

*(*P*<.05)

Table 2: Differences in leg muscle power results within the experimental group before and after 8 weeks of training.

Period of training	**N**	**Experimental group**			
		Mean	**SD.**	**Z**	***P***
Before training (E_1)	15	50.13	3.56	-3.451	0.01*
After training (E_2)	15	58.86	2.64		

*(*P*<.05)

3. Comparing the differences in the leg muscle power result between the control group and the experimental group before and after eight weeks of training, the two groups found that the leg muscle power of basketball players after training between the experimental and control groups was better than before training at statistically significant at the .05 level as shown in Table 3.

Table 3: shows the leg muscle power results of basketball players before training and after 8 weeks of training.

Group	**N**	**The result of test**							
		Before training				**After eight weeks of training**			
		Mean	**SD.**	**Z**	***P***	**Mean**	**SD.**	**Z**	***P***
Control group (C)	15	49.13	3.56	- 0.466	.653	50.93	4.44	- 4.350	.001*
Experimental group (E)	15	50.13	4.80			58.86	2.64		

*(*P*<.05)

4. Discuss the results

The effects of a plyometric training program on the leg muscle power of basketball players at Guangxi Polytechnic of Construction are discussed based on the research objectives as follows:

The first objective of this study was to develop a plyometric training program to improve basketball players' leg muscle power. The researcher submitted the plyometric training program to a panel of five experts for quality assessment to determine its appropriateness using the Index of Item-Objective Congruence (IOC). The threshold for IOC was set at 0.5 or higher. Upon evaluation, the experts provided feedback and assigned an IOC score ranging from 0.8 to 1.00 for all assessment criteria, indicating a high level of congruence between training theory and training objectives.

Furthermore, the researcher incorporated the experts' recommendations, such as structuring exercises from simple to complex and applying taping around the knees and ankles to prevent injuries during training. The plyometric program was also tested and refined to address any issues or weaknesses, ensuring its highest quality. This refinement process was facilitated by the researcher's prior study of training principles, as well as the design and development methods of a plyometric program. The researcher developed the training program based on the F.I.T.T. principle, which is widely recognized for enhancing physical fitness. This principle aligns with Naternicola (2015), who identified four key factors in physical fitness development:

- F (Frequency): Exercise should be performed 3–5 times weekly for optimal effectiveness.
- I (Intensity): The intensity should gradually increase by increasing difficulty or adding more exercises.
- T (Time): Each training session should last from 15 to 60 minutes.
- T (Type): The plyometric training method was chosen for its effectiveness in developing muscle power.

The IOC results obtained in this study also align with Phusi-on's (2015) statement that an acceptable IOC value should not be lower than 0.5. The plyometric training program was refined based on expert recommendations, particularly regarding progressive exercise sequencing, appropriate training duration, and exercise complexity. Subsequently, the researcher implemented the developed training program for basketball students at Guangxi Polytechnic of Construction to identify any issues or obstacles before collecting data. This step ensured that the program was appropriate and effective. This approach is consistent with Pipitkul (2018), who defined validity (which in this context refers to the program's ability to meet its training objectives) as the extent to which test items measure what they are intended to measure and align with theoretical frameworks. The plyometric training program developed in this study effectively improved leg muscle power in basketball players. This shows that the training program was successful in enhancing athletic performance, especially in building leg muscle power specifically for basketball players.

The second objective of this study was to compare the differences in mean leg muscle power between the control and experimental groups before and after training. The results showed that, after eight weeks of training, both groups demonstrated a statistically significant improvement in leg muscle power at the 0.05 level compared to their pre-training performance. For the group that followed the plyometric training program to develop leg muscle power, the significant improvement may be attributed to the proper application of training principles that emphasize strength and speed. This aligns with the concept that muscle power combines two key physical fitness components: muscular strength and speed. Muscle power requires resisting force while contracting muscles at high velocity, which generates explosive force for jumping. Consequently, plyometric training led to an increase in leg muscle power among basketball players.

This finding is consistent with Davies, Riemann, & Manske (2015), who stated that plyometric training must integrate both muscular strength and speed in movement execution to develop muscle power effectively. Similarly, Nikolic (2018) emphasized that muscle power training requires a foundation of muscular strength and speed, as power training is highly intensive and may pose a higher risk of injury if these two components are underdeveloped. Furthermore, specific training movements, such as the Squat Jump, Deep Jump, and Long Jump Movement, play a crucial role in developing leg muscle power. These exercises combine strength and speed, significantly improving muscle power (Ramirez-Campillo et al., 2022).

However, the research findings also indicated that the control group, which participated in a regular training program, demonstrated an improvement in mean leg muscle power after eight weeks, even without following a structured or optimized training program. This suggests the body can still develop leg muscle power through various movement patterns and jumping activities over eight weeks. This finding aligns with Thani (2020), who stated that body movement and mobility can enhance both physical fitness and sports skills. Additionally, Powers et al. (2020) emphasized that engaging in physical activity at least 3-5 days per week, which includes jumping, movement, and mobility exercises, can significantly improve physical fitness. This suggests that structured exercise is not always necessary for developing physical fitness, as general physical activity can also contribute to overall improvement.

The last objective is to compare the mean leg muscle power between the control and experimental groups after 8 weeks of training. The research findings revealed that basketball players who trained using the plyometric training program developed by the researcher had higher mean leg muscle power than those who followed a regular training program. This outcome can be attributed to the fact that the plyometric training program was designed based on sound training principles to enhance the leg muscle power of basketball players. Specifically, the plyometric training program developed in this study was structured according to the F.I.T.T. principle, which consists of four key components: 1. Frequency (F): Athletes trained three days per week. 2. Intensity (I): The number and difficulty of exercises were progressively increased every two weeks. 3. Time (T): Each training session lasted 40–50 minutes. 4. Type (T): The plyometric training method was employed, recognized as an effective approach for developing muscle power. These findings are consistent with Muhmut (2019), Heyward (1991), and Naternicola (2015), who emphasized that the F.I.T.T. principle is fundamental in designing training programs to enhance athletes' physical fitness. Similarly, research by Bal, Kaur, and Singh (2011) applied the F.I.T.T. principle to a study involving 30 basketball players aged 18–24 years, using a 6-week plyometric training program. Their results indicated that the experimental group, which followed a plyometric training regimen, showed significantly greater improvements in muscle power than the control group at a significance level of .05. Additionally, research by Aksović et al. (2021) examined the effects of plyometric training based on the F.I.T.T. principle in basketball players, demonstrating that plyometric exercises significantly enhanced explosive power. Furthermore, a study by Bouteraa et al. (2020) involved 26 female basketball players who underwent an 8-week plyometric training program, incorporating Squat Jump, Countermovement Jump, and Drop Jump exercises. Their findings showed that the experimental group had significantly greater muscle power improvements than the control group at a significance level of .05. Therefore, it can be concluded that plyometric training using the F.I.T.T. principle, which includes various jumping exercises, is considerably more effective at developing leg muscle power in basketball players than a conventional training program, with statistical significance at the .05 level.

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Quantitative Inquiry in ELT: Exploring English Teacher Educators' Experiences and Insights

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Abstract
This paper explores the role of quantitative inquiry in English Language Teaching (ELT) and applied linguistics which focuses on its methodologies, applications and contributions to the field of ELT. Quantitative research, rooted in positivist and post-positivist traditions, utilizes statistical analysis to examine relationships, identify patterns, and explore causal links in language learning and teaching. Using a qualitative approach, this study collected data from four university English teachers with extensive experience in conducting and applying quantitative research in ELT. The findings highlight that quantitative methods provide objectivity, scalability, and precision in ELT research. However, these methods also pose challenges such as, capturing social and contextual details, designing reliable instruments, and ensuring meaningful interpretation of data. Participants emphasized the significance of mixed-methods approaches to complement quantitative findings with qualitative depth, making research outcomes more applicable to real-world teaching and learning contexts. Additionally, the study underscores the need for interdisciplinary integration and methodological refinement to enhance the impact of quantitative research in ELT. By critically evaluating the strengths and limitations of quantitative inquiry, this study contributes to ongoing discussions in ELT and applied linguistics, advocating for a balanced and contextually sensitive application of statistical methods to support data-driven decision-making in language education.

Keywords: Quantitative Inquiry, Positivist Research Paradigm, Statistical Analysis, ELT, Applied Linguistics

1. Introduction

Research in English language teaching (ELT) plays an integral role in addressing pedagogical challenges, informing curriculum development and advancing theoretical understanding. Among the various research paradigms, quantitative inquiry has established itself as a cornerstone for generating data-driven insights and testing hypotheses systematically. Quantitative research method is rooted in positivist and post-positivist traditions which emphasizes objectivity, measurement and statistical analysis, enabling researchers to examine patterns, relationships and causal connections in language learning and teaching.

Paltridge and Phakiti (2015, p. 6) state, “Quantitative research generally seeks to explore or determine the relationship between variables. Such relationships can be linear (two variables can increase or decrease in value in tandem) and causal (one variable can change the characteristics of another variable).” Quantitative researchers employ variables to denote their subjects of investigation (e.g., language competency, anxiety) and utilize objective measurements or assessments to extract variables as sources of research data. Similarly, Dornyei (2007) states that "quantitative research involves data collection procedures that result primarily in numerical data which is then

analyzed primarily by statistical methods. Typical example: survey research using a questionnaire, analyzed by statistical software such as SPSS" (p.24). Likewise, Gay, Mills and Airasian (2017) assert Quantitative inquiry (QI) is "the collection and analysis of numerical data to describe, explain, predict, or control phenomena of interest. However, a quantitative research approach entails more than just the use of numerical data" (p.7). Quantitative research generally seeks to explore or determine the relationship between variables. Such relationships can be linear (two variables can increase or decrease in value in tandem) and causal (one variable can change the characteristics of another variable).

In addition, Mackey and Gass (2005) argue "Research in which variables are manipulated to test hypotheses and in which there is usually quantification of data and numerical analyses" (P. 363). Creswell and Creswell (2018) define quantitative inquiry as,

> an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion. Like qualitative researchers, those who engage in this form of inquiry have assumptions about testing theories deductively, building in protections against bias, controlling for alternative or counterfactual explanations, and being able to generalize and replicate the findings. (p. 44)

Quantitative inquiry (QI) is a robust, well-developed framework for studying elemental concepts in English language teaching (ELT) and applied linguistics such as how languages are learned, how motivated learners are, how effective teachers are, and how assessments are carried out. It utilizes organized methods such as, experiments, surveys, and data can be gathered from large groups of people. This increases the generalizability of research findings. The growth of quantitative research has come from better statistical tools and methods, making it easier to understand complex data and influencing policies and practices.

This paper investigates the principles, methodologies and applications of quantitative inquiry in ELT and applied linguistics. It explores how this research paradigm contributes to evidence-based decision-making, highlights its potential for addressing pressing challenges in the field of ELT and examines the practical considerations for designing and conducting rigorous quantitative studies.

2. Fundamental Premises and Methods

Quantitative research often entails the use of numerical data, quantification and statistical analysis to tackle a study issue or purpose, often necessitating a substantial sample size. Quantitative research is characterized by two types of statistics: descriptive statistics and inferential statistics (described below). Quantitative research designed to examine the attributes of a population (e.g., census survey, national literacy assessment) or the opinions, perceptions, and attitudes of learners (e.g., perceived efficacy of a language program, learning anxiety, and language requirements) may primarily seek to present an average score, a percentage, or a ranking for all participants. This form of quantitative study uses descriptive statistics. Another form of quantitative research seeks to do more than only present an average score, ranking score, or percentage. Researchers may seek to investigate a causal or linear relationship among many variables, such as those influencing language acquisition (e.g., age, gender, language competency, and/or aptitude of students, as well as the instructional techniques utilized).

This type of quantitative study employs inferential statistics. The inception of quantitative research was rooted in positivism, a philosophical viewpoint that seeks to comprehend the universal principles or laws that regulate human behavior. A positivist adopts a realism perspective, asserting that reality exists independently of the observer and the circumstances of examination. Contemporary quantitative researchers typically adopt a post-positivistic stance, a refined iteration of positivism. It differentiates ideology from actuality. Proponents of this perspective assert that an object of inquiry cannot be comprehended with absolute precision.

3. The Objectives

Quantitative research plays a vital role in ELT and Applied Linguistics by offering systematic, data-driven insights into language learning and teaching. This paper aims to look into the fundamental principal and methods of quantitative research. It underlines how this organized approach helps us study patterns, connections and causes in language education. Additionally, it aims to study the practical uses of quantitative research, showing its role in solving educational challenges, informing curriculum development and supporting evidence-based decision-making in ELT. Further, the study critically evaluates the strengths and limitations of quantitative inquiry in relation to English language teaching and applied linguistics.

4. Methodology

The study employed a basic qualitative design with a semi-structured interview approach to explore the perspectives of four university teachers, each holding a PhD in ELT or applied linguistics, having at least two publications using a quantitative approach. The participants had been teaching ELT and linguistic courses at Tribhuvan University for over 12 years. The participants were purposively chosen to ensure they had extensive expertise in conducting and applying quantitative research in language education. This methodological framework allowed for an in-depth examination of their experiences, challenges and contributions to ELT. The flexible yet structured nature of the interviews facilitated rich discussions on how quantitative methods inform teaching practices, assessment strategies and curriculum development, ensuring a comprehensive understanding of their impact on ELT.

5. Findings and Discussion

This section reports insights and experiences from English teacher educators on how they perceive the role of quantitative methods in ELT and applied linguistics research. The participants' experiences illustrate how quantitative methods help data-driven decisions about teaching practices, assessment strategies and curriculum development. These reflections highlight the strengths quantitative research such as the ability to identify trends, establish relationships and provide empirical evidence. In addition, the section acknowledges its limitations in adequately capturing contextual and social factors.

5.1. Pathways into ELT and Applied Linguistics: Participants' Experiences

The profession of English Language Teaching (ELT) demands both academic knowledge and practical experience. ELT professionals typically enhance their understanding through formal education, research, and real-world teaching, which influences their methods of language instruction. Feedback from participants emphasizes the importance of academic exposure, professional development, and ongoing learning in shaping their careers.

The participants shared a range of interconnected experiences in ELT. Participant 1 (P1) recounted his journey, which started with a solid academic background in applied linguistics, enhanced by years of experience in teacher training and curriculum development. The participants shared varied yet interconnected experiences in ELT. Participant 1 (P1) described his journey as one that began with a strong academic foundation in applied linguistics, complemented by years of experience in teacher training and curriculum development. "My master's studies in ELT deepened my understanding of language pedagogy, and my role as a teacher educator allows me to bridge the gap between theory and practice," he shared. Participant 2 (P2) emphasized the role of hands-on teaching in shaping his career, stating, "Starting as a secondary school teacher helped me realize the complexities of language learning, which led me to pursue further studies in applied linguistics." His transition into teacher training enabled him to guide new educators in adopting research-informed instructional methods. Participant 3 (P3) highlighted the interdisciplinary nature of his background, explaining, "My studies in linguistics and education provided me with insights into both the structural and communicative aspects of language teaching." His research in classroom discourse and pragmatics has influenced his approach to fostering interaction-based learning environments.

The responses suggest that ELT professionals acquire expertise through diverse pathways, integrating theoretical knowledge, hands-on teaching and interdisciplinary insights to enhance their pedagogical practices. While some enter the field with a strong academic foundation, others develop their expertise through direct teaching experience and further studies. Effective language teaching in ELT requires academic training, hands-on experience, and continuous professional development. Richards and Farrell (2005) highlight the need for reflective teaching that integrates theory with practice, while Burns (2021) and Rose and Galloway (2022) emphasize teacher agency and adaptability in multilingual settings. Canagarajah (2013) explores translingual practices, Medgyes (2022) examines native and non-native teacher dynamics and Norton (2021) discusses identity and investment in learning. Larsen-Freeman (2020) applies complexity theory to teacher development. These perspectives stress that beyond credentials, effective teaching depends on engaging with research, reflection, and adaptability.

5.2. The Growth of Interest in Quantitative Methods for ELT Research

Quantitative research has turned into an essential tool in English Language Teaching (ELT) and applied linguistics, providing organized and generalizable insights into the teaching and learning processes. Researchers frequently cultivate an interest in quantitative methods through a combination of academic exposure, professional challenges, and personal curiosity. In this study, participants have shared how their experiences and motivations shaped their engagement with quantitative methodologies.

P1 described his interest in quantitative methods as stemming from a desire to bring objectivity and clarity to his research. “I was initially drawn to quantitative methods because they allow for the measurement of patterns and trends in a way that feels concrete and actionable,” P1 shared. Similarly, P2 reflected on how professional demands led him to explore quantitative methods. “I needed to evaluate a teacher training program, and while qualitative feedback was insightful, I required concrete data to present to policymakers,” P2 shared. Using pre- and post-assessments helped him measure impact effectively, and the experience sparked a lasting interest in quantitative approaches. P3 highlighted the influence of interdisciplinary exposure, stating, “I was inspired by studies in psychology that used quantitative methods to explore learner behavior and outcomes.” P3 shared an example of using regression analysis to identify factors affecting students’ listening comprehension, noting, “The systematic nature of quantitative methods and their ability to address complex questions keep me engaged.”

The participants’ responses suggest that researchers develop an interest in quantitative methods due to their need for empirical rigor, practical applications and interdisciplinary insights. People are often attracted to this field either through formal education and training in statistical tools or by recognizing its significance through their job roles and the necessity for data-driven decision-making. This perspective aligns with Creswell and Plano Clark’s (2018) argument that academic exposure and practical experience are essential in nurturing an interest in quantitative research. Recent studies by Nassaji (2020) and Loewen (2022) have pointed out that interdisciplinary learning and professional demands play a significant role in steering researchers toward quantitative approaches. Similarly, Plonsky (2017) notes that greater access to statistical software and training has boosted researchers' confidence in using quantitative methods in ELT.

5.3. Experiences with Publications

Quantitative research has proven to be a vital tool in ELT and Applied Linguistics, offering robust and generalizable insights into various educational phenomena. Participants in this study shared their experiences with publishing quantitative research articles in different ways.

P1 described two studies that focused on analyzing language learning strategies among secondary school students. “In one study, I examined the relationship between the frequency of strategy use and students’ performance in English proficiency tests,” P1 explained. “The second study explored how socio-economic factors influenced students’ choice of strategies.” P1 noted that quantitative methods allowed them to analyze patterns across large sample sizes, using tools like correlation analysis and regression to uncover relationships that might have otherwise gone unnoticed. P3 shared her experience with two technology-related studies. “One study measured the impact of gamified learning platforms on vocabulary retention,” P3 explained. “We used pre- and post-tests to compare

student performance before and after introducing the platform, and the results showed significant improvement." Another study by P3 evaluated engagement levels in online versus in-person classes, using survey data from over 500 students and descriptive statistics to identify trends. Meanwhile, P4 reflected on their work in teacher training programs. "My first study assessed the impact of workshops on teachers' ability to implement communicative language teaching (CLT)," P4 added "I used pre- and post-training evaluations to measure changes in their understanding and application of CLT principles."

The responses highlight that quantitative research in ELT enhances English teachers' comprehension of language learning processes, examines educational technology and assesses teacher training programs. By employing statistical methods and analyzing extensive datasets, researchers can pinpoint significant trends, assess the effects of interventions and provide valuable insights for educational and policy decisions. These findings align with key viewpoints in the literature on quantitative research. Dornyei (2007) points out that quantitative methods are particularly effective in delivering generalizable insights and tackling complex research questions, as demonstrated in studies focused on learner strategies and technology integration. Creswell and Plano Clark (2018) emphasize the usefulness of statistical tools for identifying trends and measuring changes. Contemporary scholars like Nassaji (2020) and Loewen (2022) highlight the critical role of quantitative methods in evaluating educational technologies and professional development programs, further affirming the significance of these research initiatives. investigations. Likewise, Sato and Loewen (2023) note the growing reliance on experimental and quasi-experimental designs, and Marsden and Kasprowicz (2023) highlight the role of replication studies in strengthening research validity and reliability.

5.4. Challenges in Conducting Quantitative Research in ELT

Quantitative research in ELT and Applied Linguistics yields important insights, but it also introduces specific challenges, particularly in the areas of study design, execution, and interpretation. Participants in this study recounted their experiences dealing with these challenges, highlighting aspects like instrument development, logistical difficulties, and data analysis.

P1 shared the challenges they faced in developing research instruments, stating, "Designing reliable survey items to measure constructs like learning strategies was more complicated than I expected. It required multiple rounds of piloting and revising to ensure that the questions were clear and relevant to the participants' contexts." P1 also emphasized the difficulty of balancing theoretical constructs with practical applicability. "It was challenging to operationalize abstract concepts into measurable variables without oversimplifying them," P1 explained. Similarly, P2 highlighted the logistical challenges of data collection, sharing, "Recruiting enough participants for a statistically valid sample was one of the toughest parts. Many students and teachers were reluctant to commit due to time constraints." P2 added, "Scheduling data collection during regular class hours was tricky, as it often required negotiating with teachers to avoid disrupting their lessons." P3 reflected on the analytical challenges of working with large datasets, noting, "Interpreting statistical results in ways that are meaningful for practitioners was a constant struggle. Bridging the gap between numbers and their practical implications for teaching required a lot of thought and careful wording."

The participants' responses highlight key challenges in conducting quantitative research in ELT, particularly in designing research instruments, managing logistics, and interpreting data. Creating effective survey items necessitates several revisions to guarantee clarity and validity. Gathering data can be challenging due to participants' hesitance and scheduling issues, which complicates the process of obtaining a statistically valid sample. Furthermore, handling large datasets introduces analytical difficulties, as it takes careful interpretation to convert statistical results into actionable insights for educators. These obstacles underscore the complexities of quantitative research and the need for thoughtful methodological planning. These challenges align with existing literature on quantitative research methodology. Mackey and Gass (2005) discuss the logistical difficulties of conducting research in naturalistic classroom settings, reflecting P2's and P3's struggles with participant recruitment and data collection. Furthermore, Tracy and Seilhamer (2022) emphasize the importance of presenting findings in accessible but accurate ways, echoing P3's focus on making statistical results meaningful for non-researchers. Recent studies further substantiate these challenges. Phakiti, De Costa, Plonsky and Starfield (2021)

highlight the complexities of quantitative research design in applied linguistics, particularly in balancing theoretical and practical considerations in instrument development.

5.5. Methodological Insights with Quantitative Inquiry

Quantitative methods have emerged as a fundamental aspect of research in English Language Teaching (ELT) and Applied Linguistics. They provide systematic and generalizable insights into the processes of language learning and teaching. By utilizing these approaches, researchers can identify patterns, examine relationships, and offer data-driven recommendations that enhance both theoretical understanding and practical application.

P1 emphasized the ability of quantitative methods to identify trends and relationships in large datasets, sharing, "Quantitative research allows us to see patterns across large groups of learners. For example, when I analyzed the use of learning strategies, the data revealed which strategies were most effective for improving specific skills like reading and speaking." P1 added that statistical techniques such as correlation and regression analysis provided clarity and precision in understanding these relationships. Similarly, P3 highlighted the objectivity and scalability of quantitative methods, stating, "When I studied the impact of gamified learning platforms on vocabulary retention, the use of pre-and post-tests gave us measurable evidence of their effectiveness." P3 also noted, "Using surveys, I was able to collect data from hundreds of students, which provided a broader perspective than smaller-scale qualitative methods could achieve." P4 reflected on the practical value of quantitative findings, explaining, "In one study, I assessed the effectiveness of teacher training programs using pre- and post-training evaluations. The results showed measurable improvements, which convinced stakeholders to invest further in similar programs." P4 also mentioned the role of quantitative methods in making cross-context comparisons, adding, "By analyzing data from multiple schools, we were able to adapt programs to fit the unique needs of different regions."

The responses highlight the advantages of quantitative research in ELT, including its ability to identify patterns, measure effectiveness, and support data-driven decisions. Its ability to scale allows it to generalize more, while statistical tools boost accuracy. Quantitative results also help to improve policies and education making them useful for both the research and real-world use. These thoughts match up with what experts say about quantitative research in applied linguistics. Dornyei and Taguchi (2010) emphasize the importance of survey-based quantitative approaches for understanding learner motivation and engagement, which resonates with P3's use of large-scale data collection. Similarly, Brown (2014) discusses the significance of experimental and quasi-experimental designs in language testing and assessment, supporting the findings of P4 regarding evaluating teacher training programs and their impact.

5.6. Addressing Criticisms of Quantitative Methods in ELT

Quantitative methods are fundamental to ELT and Applied Linguistics research, offering generalizable and measurable insights into teaching and learning processes. However, these methods often face criticism for oversimplifying the complexities of language learning and teaching by focusing primarily on numerical data. Participants in this study shared their strategies for addressing such criticisms, emphasizing the importance of complementing quantitative methods with contextual depth, thoughtful design, and practical applications.

P2 highlighted the importance of incorporating contextual variables into research design, stating, "Quantitative methods can capture more complexity when socio-cultural factors are included. For instance, in a study on task-based learning, I accounted for variables like class size and students' educational backgrounds to ensure the results were meaningful in real-world contexts." P2 also underscored the value of mixed methods, explaining, "After collecting quantitative data, I often conduct follow-up interviews or focus groups to understand the reasons behind the patterns observed. This adds depth to the findings." P3 focused on refining research tools to address potential biases, sharing, "Pilot studies are crucial for identifying gaps or biases in survey instruments or tests. This ensures the tools are sensitive to diverse learner experiences." P3 also emphasized triangulation, adding, "Combining data sources, such as test results, classroom observations, and teacher feedback, provides a more comprehensive picture of the learning environment." P4 stressed the importance of linking quantitative findings to practical applications, stating, "In one study on teacher training, we used pre-and post-training assessments to measure impact but also

included follow-ups with administrators to see how the training translated into classroom practices." P4 also highlighted the value of longitudinal studies, explaining, "By tracking changes over time, we could examine how interventions adapted to different contexts, which added depth and relevance to our findings."

The responses highlight strategies for addressing criticisms of quantitative research in ELT by incorporating contextual depth, refining research tools, and ensuring practical relevance. Researchers enhance quantitative studies by integrating socio-cultural variables, using mixed methods for deeper insights, and piloting instruments to minimize biases. Triangulation and longitudinal studies further strengthen findings, making them more comprehensive and applicable to real-world teaching and learning contexts. These reflections align with established literature on addressing the limitations of quantitative methods. Dornyei (2007) highlights the importance of careful instrument design and contextual sensitivity, echoing P2's focus on incorporating socio-cultural factors. Additionally, Nassaji (2020) and Loewen (2022) advocate for the use of triangulation and longitudinal studies to capture the dynamic and evolving nature of language learning and teaching.

5.7. Connecting Quantitative Findings to Classroom Practices in ELT

Quantitative research plays a crucial role in improving classroom practices in ELT by bridging the gap between theoretical insights and practical applications. These methods provide data-driven recommendations that inform teaching strategies, enhance learner engagement and guide curriculum design. By identifying patterns and trends, quantitative studies ensure evidence-based decision-making that can be tailored to specific teaching contexts. Participants in this study shared how their findings contribute to practical outcomes, emphasizing the importance of interpreting data in ways that address classroom realities and resonate with the needs of teachers and learners.

P1 shared how their research findings guide teachers toward adopting more effective strategies, stating, "The primary contribution of quantitative findings is in identifying patterns that lead to higher engagement levels. For example, my study on student motivation showed that collaborative activities significantly improved participation." P1 explained that they share these findings with teachers during professional development sessions, which enables practitioners to implement evidence-based techniques in their classrooms. P2 reflected on using quantitative research to assess specific teaching methods, such as task-based learning. "The results of my study showed significant improvements in students' reading comprehension, and sharing these findings allowed teachers to make informed decisions about their instructional practices," P2 noted. P2 also emphasized the importance of contextualizing findings by considering cultural and linguistic factors, adding, "Collaboration with educators during dissemination ensures that the research is interpreted effectively and adapted to local contexts." P4 highlighted how quantitative findings contribute to broader curriculum development and policy decisions, sharing, "In one of my studies, data on the relationship between class size and student achievement in English proficiency tests was used to advocate for smaller class sizes." P4 stressed the importance of aligning findings with real-world teaching environments, explaining, "I work closely with policymakers to ensure that data-driven decisions are realistic and sustainable."

The responses highlight how quantitative Inquiry (QI) informs classroom practices in ELT by identifying effective teaching strategies, assessing instructional methods, and influencing curriculum decisions. Findings help educators adopt evidence-based techniques, ensuring that research outcomes are applicable to real-world teaching contexts. Collaboration with teachers and policymakers further enhances the relevance and sustainability of data-driven improvements in language education. These reflections align with the perspectives of scholars who emphasize the practical applications of quantitative research in ELT. Brown (2004) highlights how quantitative research offers actionable insights into teaching practices when interpreted within specific contexts, which resonates with P1's and P2's emphasis on tailoring findings to classroom needs. Ellis (2008) underscores the importance of connecting findings to classroom applications to ensure their relevance to teachers. Recent scholars, such as Nassaji (2020) and Loewen (2022), advocate for integrating quantitative findings into teacher training programs to bridge the gap between research and practice.

5.8. Quantitative Inquiry in Teaching and Curriculum Design in ELT

Quantitative research in ELT has a powerful role in shaping teaching practices and curriculum design, offering evidence-based insights that inform decision-making at various levels. Participants in this study provided concrete examples of how their research findings were applied to real-world educational contexts, influencing teaching strategies and policies. They highlighted the significance of tailoring findings to local needs and ensuring the practical relevance of research outcomes for teachers and learners alike.

P2 shared, “My study on project-based learning (PBL) in English classes showed that it significantly improved students' speaking confidence and collaborative skills.” The findings were presented in teacher training workshops, where educators were encouraged to implement PBL. “Teachers reported that students became more engaged and used English more naturally during group tasks,” P2 noted. To ensure practical implementation, P2 worked with teachers to adapt activities to different school contexts. P3 explained, “In a study on vocabulary retention, I found that contextualized tasks yielded better retention than isolated word lists.” This led to changes in assessment design, incorporating scenario-based tasks. “Teachers observed that students retained vocabulary better and applied it effectively in speaking and writing,” P3 shared. P4 discussed curriculum reform, stating, “My large-scale study showed a strong correlation between digital tools and student engagement.” This resulted in integrating interactive platforms for grammar and listening practice. “Training teachers and providing technical support ensured sustainable classroom changes,” P4 concluded.

The responses illustrate how quantitative research influences teaching practices, assessment methods, and curriculum design in ELT. Research findings help educators implement innovative strategies like project-based learning, improve assessment authenticity, and integrate digital tools to enhance student engagement. Collaboration with teachers and administrators ensures that these evidence-based changes are practical, adaptable, and sustainable in diverse educational contexts. These examples align with the perspectives of Brown (2004) and Ellis (2008), who emphasize the importance of applying research findings to real-world educational contexts. More recent contributions, such as Nassaji (2020) and Loewen (2022), highlight the growing importance of technology and contextualized learning in ELT, reinforcing the participants' emphasis on adapting research findings to meet the evolving needs of learners and educators.

5.9. Alignment with Qualitative and Mixed Methods Approaches

Quantitative research plays a crucial role in ELT by providing measurable and generalizable insights. However, its scope compared to qualitative and mixed methods often prompts reflection, as each approach offers unique strengths and limitations. Participants in this study shared their experiences and perspectives on how quantitative methods align with or differ from qualitative and mixed methods in ELT research. Their responses highlighted the importance of selecting an approach that fits the research objectives and addresses the complexity of language teaching and learning.

P1 highlighted the value of quantitative methods for identifying trends, stating, “I’ve used surveys to examine students’ attitudes toward blended learning, and the statistical analysis provided clear, actionable results.” However, they noted its limitations, adding, “That’s where qualitative methods come in.” P1 emphasized mixed methods, explaining, “Quantitative data gives me the bigger picture, while qualitative data helps explain why those trends exist.” P2 echoed this, noting that while quantitative methods effectively evaluate interventions, they lack depth in understanding learning dynamics. “In one study, I paired pre- and post-tests with observations and interviews. The test scores showed improvement, but qualitative data revealed motivation’s key role,” P2 shared. P3 agreed, stating, “Quantitative methods establish causal relationships but don’t always account for social and cultural factors.” They explained, “I started with quantitative tests but followed up with focus groups to understand learners’ challenges. This combination helped refine instructional materials.”

The responses highlight that while quantitative research provides objective and generalizable insights, it often lacks the depth needed to fully understand complex ELT phenomena. Combining qualitative methods helps capture learner experiences, motivation, and contextual factors, making research findings more applicable to real-world

teaching. These perspectives collectively emphasize that while quantitative methods excel in objectivity and generalizability, integrating qualitative methods adds depth and context, making the research more applicable to real-world ELT scenarios. These reflections align with Creswell and Plano Clark's (2018) argument that mixed methods provide a holistic approach to research by integrating quantitative breadth with qualitative depth. Bryman (2012) further highlights the complementarity of research methods, emphasizing that mixed methods bridge the gap between numerical analysis and contextual depth. Moreover, Paltridge and Phakiti (2015) argue that combining approaches enhances the validity of findings in applied linguistics, ensuring that research reflects both broad trends and individual learning experiences. Finally, Riazi and Candlin (2014) stress the necessity of methodological pluralism in ELT research, advocating for a balanced integration of different research paradigms to achieve comprehensive insights.

5.10. Advice for Early-Career Researchers

Quantitative research plays a vital role in ELT, offering measurable and generalizable insights into teaching and learning processes. It enables researchers to identify patterns, establish relationships, and provide evidence-based recommendations for classroom practices and policy decisions. However, for early-career researchers, successfully implementing quantitative methods requires careful planning, methodological rigor, and an understanding of how to connect findings to real-world contexts. Participants in this study shared their experiences and advice on how to navigate the challenges and opportunities of quantitative research in ELT, emphasizing practical steps and strategies to ensure impactful research outcomes.

P2 highlighted the importance of aligning research questions with the strengths of quantitative methods, sharing, "Quantitative research excels in identifying patterns and testing relationships between variables." P2 stressed the value of piloting instruments, explaining, "Before administering large-scale tests, conduct a pilot study to save time and improve the quality of your data." P3 focused on the necessity of mastering data analysis tools, advising, "Early-career researchers should invest time in learning statistical software like SPSS or R. A strong command of analysis methods allows you to interpret your data accurately and present it meaningfully." P3 also emphasized the importance of contextualizing numerical results, stating, "Quantitative data can sometimes seem disconnected from real-world implications. Frame your findings in ways that directly relate to classroom practices." Meanwhile, P4 stressed the ethical and practical aspects of quantitative research, noting, "Ensure your studies adhere to ethical guidelines, such as informed consent, anonymity, and transparency, to maintain trust with participants." P4 also underscored the importance of disseminating findings effectively to practitioners, stating, "Present your findings in accessible formats like workshops or practitioner-focused publications to bridge the gap between research and practice."

The responses highlight key advice for early-career researchers in ELT, emphasizing the need for careful planning, methodological rigor, and practical application of quantitative research. Piloting instruments, mastering statistical tools, and contextualizing findings enhance research quality and relevance. Ethical considerations and effective dissemination ensure that research findings contribute meaningfully to teaching and learning practices. These reflections align with Dornyei's (2007) emphasis on methodological training and ethics, Creswell and Plano Clark's (2018) focus on piloting and data analysis, and Nassaji's (2020) call for practical dissemination.

5.11. Exploring Underutilized Areas for Quantitative Methods in ELT

Quantitative research has long been a cornerstone of ELT, offering valuable insights into language teaching and learning processes. However, there are still several underexplored areas where quantitative methods could make a greater impact. Participants in this study identified domains such as long-term learning outcomes, teacher development programs, and the integration of technology in language acquisition as areas where quantitative approaches could fill critical gaps. By addressing these underutilized areas, researchers can generate robust evidence to improve educational practices, guide policy decisions, and enhance the effectiveness of ELT methodologies.

P1 highlighted the need for quantitative research on long-term learning outcomes, stating, “We often see short-term results being measured, but the long-term impact of instructional methods on language retention and fluency is rarely explored using quantitative data.” P1 added that tracking students’ progress over several years through statistical analysis would provide invaluable insights for curriculum design and policy-making. Similarly, P2 emphasized the potential for quantitative studies in teacher development programs. P2 remarked, “While qualitative research has explored teacher beliefs and practices extensively, large-scale quantitative studies measuring the effectiveness of professional development programs are scarce.” P2 suggested using pre-and post-assessments to identify which training modules lead to measurable improvements in classroom practices and student outcomes. Meanwhile, P3 focused on the integration of technology in language learning, stating, “There’s a lot of qualitative work on perceptions of digital tools, but we need more quantitative studies to measure their actual impact on learning outcomes.” P3 explained, “Analyzing test scores or engagement metrics before and after the implementation of digital platforms could provide concrete evidence of their effectiveness.” P3 also stressed the importance of longitudinal studies in this area, noting, “Technology evolves rapidly, so measuring its long-term impact on skills like writing, speaking, or listening would help institutions make informed decisions.”

The responses highlight underexplored areas where quantitative research could enhance ELT, including long-term learning outcomes, teacher development programs, and the impact of technology on language acquisition. Tracking student progress over time, measuring the effectiveness of professional training, and analyzing digital tools' impact with statistical methods can provide valuable, data-driven insights. Expanding quantitative research in these areas would strengthen curriculum design, guide policy decisions, and improve teaching methodologies. These reflections support Bachman's (2004) argument that test-based quantitative research for assessing language proficiency and instructional impact, while Norris (2015) underscores the role of large-scale empirical studies in validating assessment frameworks and pedagogical interventions. Furthermore, DeKeyser (2017) argues for the necessity of experimental quantitative approaches to investigate language learning processes. Recent scholars such as Ellis and Shintani (2022), Plonsky (2023) and Taguchi (2021) emphasize the increasing role of data-driven methodologies in language acquisition, testing, and teacher training research.

6. Conclusions

This study has explored the pivotal role of quantitative inquiry in ELT research which considers its systematic approach to investigating pedagogical challenges, assessing instructional efficacy, and informing curriculum development. The study employed a basic qualitative design with semi-structured interviews, allowing for an in-depth exploration of experts’ perspectives on the relevance and application of quantitative methods in language education. The findings demonstrate that quantitative methods in language education offer objectivity, scalability and statistical precision. However, they require careful instrument design, validity checks and contextual sensitivity to maximize their applicability in ELT.

The study also shows that effective quantitative research in ELT must go beyond statistical generalization to ensure practical relevance for educators and policymakers. This is achieved through integrating robust data analysis techniques, such as inferential and descriptive statistics, and linking findings to classroom realities. Addressing common criticisms of quantitative research, participants emphasized the value of mixed methods approaches, contextual adaptations and longitudinal studies to capture the complexity of language learning and teaching. By advancing methodological practices and fostering interdisciplinary collaborations, quantitative research will remain an indispensable tool in shaping ELT policies and pedagogical innovations.

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Teachers' Perspectives on the Use of Holographic Teachers in Future Education

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Abstract
This study aims to examine the views of middle school teachers regarding the use of holographic teachers in future education through a qualitative approach. A phenomenological design was adopted for the research, and semi-structured interviews were conducted with 25 middle school teachers selected from the central district of Malatya. During the data collection process, the interviews were supported by audio recordings, and the data were categorized into thematic themes using descriptive analysis methods. The teachers indicated that holographic teachers could offer content tailored to each student's individual needs and make lessons more interactive thanks to artificial intelligence-supported algorithms. However, significant challenges such as high costs, lack of technological infrastructure, difficulties in teacher adaptation, and the weakening of student-teacher relationships were also identified. In conclusion, while holographic teachers present great opportunities for the potential in education, comprehensive planning, adequate resource provision, and support for teachers' professional development are necessary for successful integration.

Keywords: Holographic Teachers, Educational Technologies, Qualitative Research, Teacher Perspectives, Innovation in Education

1. Introduction

Three-dimensional (3D) technologies are increasingly being utilized as effective instructional tools to enhance students' knowledge levels on subjects and their participation in lessons (Annetta et al., 2009; Mellet-d'Huart, 2009). The ability to examine three-dimensional objects created with these technologies from different angles supports students' experiential and hands-on learning processes (Wu et al., 2013). Additionally, it is known that 3D technologies capture children's interest, increase attention, and make the learning process more engaging (Billinghurst, Kato & Poupyrev, 2001; Oh & Woo, 2008; Zhou, Cheok & Pan, 2004).

Hologram technology, which is among three-dimensional technologies, is a visualization tool that enables the creation of realistic three-dimensional images through holographic projection using coherent light sources such as laser light (Katsioloudis & Jones, 2018). This technology offers a strong alternative to traditional two-dimensional images, possessing the potential to enhance students' sensory perception, cognition, and memory capacities across

a wide range of educational levels, from primary to higher education (Mnaathr & Basha, 2013; Walker, 2013). Holograms, which are increasingly used in learning environments, attract students' attention, increase their motivation, and contribute to the development of positive attitudes towards lessons by providing realistic visual experiences (Işık et al., 2009; Lu et al., 2011; Walker, 2013). Furthermore, its qualities such as supporting personalized learning experiences, appealing to multiple senses, and being accessible and economical indicate that hologram technology will become one of the indispensable technologies in future learning environments (Aslan, 2017; Katsioloudis & Jones, 2018).

The development of hologram technology began in the 19th century when John Henry Pepper created a three-dimensional image in 1862 using optical projection and special light sources at a 45-degree angle with the aid of glass (Secord, 2002). In 1891, Gabriel Lippmann conducted studies aimed at producing color photographs and recording color information using the interference method. In 1947, Gabor introduced the theory of holography to utilize optical waves obtained from special glass to correct magnetic errors in electron microscopes, and in 1960, with the advent of He-Ne lasers by Leith and Upatnieks, three-dimensional holograms of desktop objects were produced (Ecevit, 2009). In 1962, Yuri Denisyuk named single-beam holograms "Lippmann's hologram" (Leonardo, 2001, as cited in Işık, 2012), and in 1964, the interdisciplinary potential of holographic techniques was demonstrated through stage applications at a conference. In 1968, transmissive holograms, and in 1972, the combination of white-light transmissive holography with cinema recording techniques, led to the emergence of moving three-dimensional cinema capabilities (Ecevit, 2009). In the 1980s, solid-state lasers increased the accessibility of hologram technology (Chin & Kim, 2015).

Holograms featured in an exhibition in Seoul in 2007 garnered international attention through virtual presentations using three-dimensional hologram technology by Bill Gates and Prince Charles in 2008. In 2010, moving three-dimensional holograms were developed, and in 2013, a company in Turkey produced a large hologram display device named HoloArc, subsequently establishing a hologram briefing room. In 2014, Apple patented a glasses-free interactive holographic touch screen. In 2016, Microsoft HoloLens enabled users to create three-dimensional holographic images using headphones and voice commands. This historical progression demonstrates that hologram technology has continuously evolved and found applications in various fields (Güntepe, 2020).

The increasing use of technology in education brings along a demand for innovative applications that enhance students' interest, motivation, and interaction in the teaching and learning processes. In this context, studies on the use of hologram technology indicate the enrichment of instructional environments through holographic teacher models (Mnaathr & Basha, 2013; Walker, 2013). Holographic teachers go beyond traditional two-dimensional presentations by offering realistic and multi-dimensional visual experiences through three-dimensional reflections created by laser-based coherent light sources, thereby enabling the enhancement of students' sensory perceptions and memory capacities (as cited in Ecevit, 2009, from Gabor, 1947; Katsioloudis & Jones, 2018; Wu et al., 2013). This technology can create a learning ecosystem that supports a student-centered approach, allowing learners to actively engage with and interact with learning materials. Specifically, the ability to create personalized learning experiences, appeal to multiple senses, and its accessibility position holographic teachers as one of the indispensable educational technologies of the future.

This study aims to examine middle school teachers' perspectives on the use of holographic teachers in future education through a qualitative research approach. The primary objective of the research is to assess the potential benefits of holographic teachers in education and the challenges that may be encountered from the teachers' viewpoints. By investigating the role and future potential of holographic teachers in education, this research will contribute to the development of necessary strategies for the effective integration of educational technologies.

2. Method

2.1. Research Model

This study is conducted within the framework of a qualitative research approach. Qualitative research allows for the natural examination of phenomena in their own context by utilizing various qualitative data collection methods

such as observation, interviews, and document analysis (Yıldırım & Şimşek, 2011). In this method, researchers are interested in the concepts created by individuals and the meanings associated with these concepts (Merriam, 2013). Additionally, qualitative research involves analyzing the meanings attributed to social issues and employing interpretive techniques to analyze research problems. Researchers perform thematic analyses on data obtained through deductive and inductive reasoning, demonstrating sensitivity to the human and environmental context. This approach enables the in-depth examination and interpretation of data (Creswell, 2013). In this study, the phenomenological design, one of the qualitative research patterns, was utilized. Phenomenology is a method aimed at gathering information about events by examining individuals' experiences (Kocabıyık, 2016). Events, experiences, perceptions, concepts, and situations encountered in our lives may manifest as phenomena with meanings that are not fully resolvable. The phenomenological design is preferred to better understand such phenomena. Phenomenology draws from the sources and diversity of individual experiences; it analyzes, evaluates, and compares these experiences. This method allows for a detailed examination of unknown or insufficiently understood phenomena, thereby providing a broader and deeper understanding (Yıldırım & Şimşek, 2011; Creswell, 2013; Patton, 2014).

In the phenomenological approach, data sources are generally individuals who experience the events. The primary data collection method for these studies is interviews. Additionally, the observation method is used as a supportive data collection tool. Since phenomenology is part of qualitative research methodology, it provides information that aids in the clearer and more detailed understanding of phenomena rather than offering generalizable or definitive results. Studies facilitate a better comprehension of the subjects by presenting case studies based on specific experiences and providing explanations (Yıldırım & Şimşek, 2011).

2.2. Participants

In this study, the convenient sampling technique, one of the purposive sampling methods, was employed. This method allows the researcher to select situations that are easily accessible and close to them, facilitating the progression of the research in a quick and practical manner. Convenient sampling is typically preferred in situations where other sampling methods are not applicable, as it is a low-cost and practical approach (Yıldırım & Şimşek, 2011; Büyüköztürk, 2016). Using this method, the study was conducted with a total of 25 middle school teachers, comprising 13 female and 12 male teachers working in middle schools in the central district of Malatya. The principle of easy accessibility was observed in participant selection. The data collection process continued until sufficient and satisfactory information was obtained, and the study group was completed after interviewing the 25th participant.

In this study, it was determined that sufficient data was provided and no new information was being obtained, leading to the completion of the study group. Participants were assigned codes such as P1, P2, P3, ..., P25 to maintain confidentiality. Additionally, the data obtained from the interviews were included in the findings section to support and provide evidence for the results.

Table 1: Sociodemographic Characteristics of the Teachers Forming the Working Group

Characteristic	Description
Gender	13 female, 12 male
Age Range	25-50 years
Professional Experience	5-25 years
Education Level	All teachers have at least a bachelor's degree, 11 teachers have a master's degree

2.3. Data Collection Tool

In this research, a semi-structured interview form containing open-ended questions prepared by the researcher was utilized as the data collection method. During the development of the interview form, the first step involved reviewing the relevant literature on the subject and establishing a framework that includes key points. Subsequently, the validity of the interview form was ensured by consulting experts. In this context, the opinions

of three faculty members from the Department of Turkish and Social Sciences Education at İnönü University were sought. Additionally, two social studies teachers and one Turkish teacher reviewed the questions. Necessary updates were made in accordance with the recommendations. After incorporating the required revisions and additions, this framework was finalized into the definitive interview form.

The questions expected to be answered in the interview form are as follows:

- Can you share your general views on the use of holographic teachers in education?
- How do you plan to integrate holographic teachers into your lessons?
- What are your thoughts on the impact of holographic teachers on students?
- What potential difficulties might you encounter in the use of holographic teachers?
- How do you think holographic teachers will affect the current roles of teachers?
- What are your expectations regarding future trends and innovations related to the use of holographic teachers in education?

2.4. Data Collection and Analysis

This study was conducted with 25 middle school teachers working in middle schools in the central district of Malatya during the 2023-2024 academic year. Throughout the research process, pre-scheduled interviews were conducted with the participants. The locations and times of the interviews were determined based on the availability of the participants. During the interviews, audio recordings were made to facilitate detailed analysis. The data analysis was performed using the descriptive analysis method. In the analysis process, thematic categories were first established based on the research questions and the theoretical framework. Subsequently, the obtained data were organized according to these categories. Finally, the data were presented with frequency values.

3. Results

In this section, the findings obtained from the research are presented and interpreted through tables.

Table 2: Participants' Views on “Can you share your general views on the use of holographic teachers in education?”

Theme	Frequency (f)
Revolution in Education	12
Accessibility and Overcoming Geographical Barriers	8
Personalized and Adaptive Learning	7
Interactive Learning	6
High Costs and Technological Infrastructure Requirements	5
Redefinition of Teacher Roles	5
Decrease in Human Relationships	4
Difficulty in Adapting to Technology	3
Change in Student-Teacher Relationships	2

- *P2: “We could call holographic teachers a revolution in education. Students can interact with holographic teachers from all around the world, creating a global learning environment.”*
- *P9: “However, the cost of this technology could be quite high. Establishing and maintaining the necessary technological infrastructure may require a substantial budget for schools.”*
- *P11: “Holographic teachers are evolving teachers’ roles. Instead of focusing on information transfer, we need to concentrate more on guidance and mentorship.”*
- *P17: “The adaptation process to this technology can be challenging for teachers. Comprehensive training programs are needed to effectively use this new technology.”*
- *P19: “The change in student-teacher relationships may weaken emotional bonds. Technology-based*

interactions completely replacing face-to-face communication could lead to undesirable outcomes."

In the research, participants' general views on the use of holographic teachers in education were categorized around various themes. The most prevalent theme, Revolution in Education (f=12), suggests that holographic teachers could bring about significant changes in the education system, enabling students to interact with experts worldwide and creating a global learning environment. For instance, having a holographic representation of Einstein participate in a history lesson could captivate students' interest. The second theme, Accessibility and Overcoming Geographical Barriers (f=8), highlights that this technology can provide quality education access to students in rural and remote areas. The third theme, Personalized and Adaptive Learning (f=7), emphasizes that holographic teachers, supported by artificial intelligence algorithms, can offer content tailored to each student's individual needs, making learning processes more efficient by adapting to students' learning speeds and styles. The fourth theme, Interactive Learning (f=6), indicates that holographic teachers can create more interactive learning experiences. For example, students might explore the three-dimensional structure of cells in a biology class with a holographic teacher, enhancing their learning engagement. The themes High Costs and Technological Infrastructure Requirements (f=5) and Redefinition of Teacher Roles (f=5) underscore the financial challenges and the need for teachers to evolve their roles towards more mentorship-oriented functions. Other themes include Decrease in Human Relationships (f=4), reflecting concerns that holographic teachers might negatively impact teacher-student relationships, Difficulty in Adapting to Technology (f=3), highlighting the challenges teachers may face in adapting to new technologies, and Change in Student-Teacher Relationships (f=2), which points to potential negative effects on students' emotional connections with teachers due to the shift to technology-based interactions. Overall, the participants' views on the use of holographic teachers in education encompass both innovative opportunities and significant challenges, emphasizing the need for balanced and comprehensive strategies for effective integration into the education system.

Table 3: Participants' Views on "How do you plan to integrate holographic teachers into your lessons?"

Theme	Frequency (f)
Animation of Historical Figures in History Classes	16
Geographic Simulations and Visualizations	12
Interactive Q&A and Discussion Sessions	10
Support for Art and Cultural Activities	8
Practice and Interaction in Language Learning	6
Applications in Science and Technology Classes	4
Virtual Field Trips and Explorations	3
Enrichment of Lesson Materials	1

- *P1: "By using holographic teachers in history classes, we can bring historical figures to life. For example, we could invite Atatürk holographically to our class and listen to his speeches."*
- *P3: "In geography classes, thanks to holographic teachers, we can show our students topics like the formation of mountains or the flow of rivers through 3D simulations."*
- *P7: "In art classes, through holographic teachers, we can teach the techniques of famous artists and provide live demonstrations for our students."*
- *P9: "In language learning, holographic teachers can engage in interactive dialogues with students, allowing them to practice and thereby improve their language skills."*
- *P15: "In student projects, holographic teachers can guide them during their research processes and support their presentations, thereby enhancing the quality of their projects."*

In the study, participants' views on integrating holographic teachers into their lessons were grouped around nine main themes. The highest frequency theme, Animation of Historical Figures in History Classes (f=16), suggests that holographic teachers can bring historical personalities and events to life, providing students with a more vivid and interactive learning experience. For instance, inviting a holographic representation of an important historical figure like Atatürk could significantly increase students' interest in history topics. The second most common theme,

Geographic Simulations and Visualizations (f=12), indicates that holographic teachers can utilize 3D simulations and visualizations in geography lessons to concretize natural processes such as mountain formation or river flow, aiding students in better understanding geographic concepts. The third theme, Interactive Q&A and Discussion Sessions (f=10), highlights the potential for holographic teachers to organize interactive sessions during lessons, encouraging active student participation and engagement with the lesson material. The fourth theme, Support for Art and Cultural Activities (f=8), suggests that holographic teachers can assist in teaching artistic techniques and providing live demonstrations, thereby helping students develop their artistic skills. The fifth theme, Practice and Interaction in Language Learning (f=6), emphasizes that holographic teachers can facilitate interactive dialogues, enabling students to practice and enhance their language abilities. Other themes include Applications in Science and Technology Classes (f=4), where holographic teachers can visualize complex experiments and theories to help students better grasp scientific concepts, Virtual Field Trips and Explorations (f=3), which involve holographic teachers organizing virtual excursions to different parts of the world, and Enrichment of Lesson Materials (f=1), indicating that holographic teachers can make lesson materials more diverse and interactive, offering richer content to students. Overall, the participants' perspectives on integrating holographic teachers into their lessons reveal a strong inclination towards enhancing engagement, interactivity, and the quality of education through innovative technological applications.

Table 4: Participants' Views on "What are your thoughts on the impact of holographic teachers on students?"

Theme	Frequency (f)
High Participation	18
More Interactive and Lively Lessons	9
Technological Curiosity and Interest	7
Attention Distraction and Technology Dependence	6
Technological Barriers to Learning Processes	6
Change in Teacher-Student Relationships	4
Development of Empathy and Social Skills	1

- *P3: "Students can have more interaction with holographic teachers. Through interactive activities, they can actively participate in classes."*
- *P9: "Students who are curious about technology may further increase their interest thanks to holographic teachers."*
- *P15: "Some students may become distracted because of holographic teachers. The risk of technology addiction should not be ignored."*
- *P17: "The lack of necessary infrastructure for using holographic teachers can create technological barriers for some students, negatively affecting the learning process."*
- *P19: "The change in teacher-student relationships with holographic teachers might create feelings of loneliness in some students. If technology completely replaces human interaction, it could adversely affect students' emotional development."*

In the research, participants' views on the impact of holographic teachers on students were categorized around eight main themes. The most frequent theme, High Participation (f=18), indicates that holographic teachers can enhance students' involvement in lessons through interactive activities, making them more willing to engage in the learning process. The second most prevalent theme, More Interactive and Lively Lessons (f=9), suggests that integrating technological innovations like holographic teachers can make lessons more dynamic and interesting, increasing students' motivation to learn by making lesson materials more engaging. The third theme, Technological Curiosity and Interest (f=7), observes that holographic teachers can further stimulate the motivation of students interested in technology, reinforcing their overall learning motivation by nurturing their interest in technological advancements. The fourth and fifth themes, Attention Distraction and Technology Dependence (f=6) and Technological Barriers in Learning Processes (f=6), highlight potential negative impacts. Some students might experience distractions during the use of holographic teachers, and there is a risk of technology dependence. Additionally, the lack of necessary infrastructure to effectively utilize holographic teachers can create

technological barriers for some students, adversely affecting their learning processes. The sixth theme, Change in Teacher-Student Relationships (f=4), suggests that the use of holographic teachers could reshape teacher-student relationships, potentially leading to feelings of loneliness among some students. If technology-based interactions completely replace face-to-face communication, it may negatively impact students' emotional development. The final theme, Development of Empathy and Social Skills (f=1), posits that holographic teachers could aid in developing students' empathy and social skills, even in a virtual environment, by providing opportunities for empathy-building interactions. The participants' expectations regarding the impact of holographic teachers on students encompass both the potential of making learning processes interactive through technology and some negative effects. In addition to positive effects such as high participation and interactivity, challenges like attention distraction, technology dependence, and changes in teacher-student relationships are also considered. These findings indicate that the use of holographic teachers in education carries both opportunities and risks, highlighting the necessity for a balanced approach to effectively integrate this technology.

Table 5: Participants' Views on "What potential difficulties might you encounter in the use of holographic teachers?"

Theme	Frequency (f)
Technological Infrastructure and Access Problems	14
High Costs	9
Teacher Adaptation	8
Students' Reactions to Technology	6
Reliability and Accuracy Concerns	4
Data Security and Privacy	3
Maintenance and Technical Support Requirements	2
Adapting Educational Materials	2

- *P5: "Establishing the necessary technological infrastructure for the effective use of holographic teachers can be quite costly. I'm concerned about whether schools will be able to cover these expenses."*
- *P7: "Teachers will need special training to be able to use this new technology. It may take time for current teachers to embrace the technology, and difficulties might be experienced during this process."*
- *P11: "Students' reactions to holographic teachers may vary. While some students may find this technology exciting, others may remain uninterested because they are not sufficiently technologically equipped."*
- *P16: "I have concerns about the accuracy of the information provided by holographic teachers. Incorrect…"*
- *P21: "It may be difficult for educational materials to adapt to holographic teachers. It could take time for the existing curriculum and materials to be integrated into this technology."*

In the study, participants' views on the difficulties they might encounter in using holographic teachers were grouped under eight main themes. The theme with the highest frequency, technological infrastructure and access problems (f=14), indicates that establishing the necessary technological infrastructure and ensuring access to these technologies are seen as the greatest barriers to effectively using holographic teachers. Participants expressed concerns about whether schools would be willing and able to make the required investments to adopt this technology. The second most common theme is high costs (f=9). The high cost of holographic teachers can place a significant burden on school budgets, making the widespread adoption of this technology more difficult. The third theme is teacher adaptation (f=8), highlighting that teachers need special training and ongoing professional development to effectively use this new technology. The process of current teachers embracing the technology may take time and could involve various challenges. The fourth theme, students' reactions to technology (f=6), shows that participants believe students' responses to holographic teachers may vary. While some students might find this technology exciting, others may remain indifferent due to insufficient technological preparedness. The fifth theme, reliability and accuracy concerns (f=4), points to worries about the accuracy of the information provided by holographic teachers. If incorrect information is presented, there is a risk of misguiding students. The

sixth theme, data security and privacy (f=3), reflects the importance of protecting students' personal information and ensuring data security when using holographic teachers. Thus, the implementation of strict policies and security measures is necessary. The seventh theme, maintenance and technical support requirements (f=2), indicates that the ongoing need for maintenance and technical support may increase teachers' workloads and necessitate additional resources. Lastly, the eighth theme, adapting educational materials (f=2), suggests that integrating existing curricula and materials with holographic teachers could be challenging and time-consuming. Overall, participants' expectations about potential difficulties in using holographic teachers include various factors such as technological and financial barriers, teacher adaptation, student reactions, and data security concerns. These findings underscore the importance of comprehensive planning, adequate funding, teacher training, and implementing security measures to effectively utilize holographic teachers in education.

Table 6: Participants' Views on "How do you think holographic teachers will affect the current roles of teachers?"

Theme	Frequency (f)
Changes in Teacher Roles	14
Decrease in Traditional Teacher-Student Interaction	8
More Guidance and Mentorship Roles	6
Digital Skills	5
Reduced Workload	4
Teachers' Professional Development	3
Development of Teaching Materials and Methods	2

- *P1: "Holographic teachers will lead traditional teachers like me to redefine our roles. We will have to engage more in guidance and mentorship since the basic transmission of information will be provided by holographic systems."*
- *P6: "The decrease in traditional teacher-student interaction is concerning. Our one-on-one communication with students may become more limited, which could make it harder to meet their emotional needs."*
- *P18: "We will need to develop our digital skills to integrate technology. Working with holographic teachers makes it essential for us to become more competent in effectively using technology."*
- *P19: "My workload may decrease because holographic teachers will take over some tasks. This will give me more opportunities to spend one-on-one time with the students."*
- *P23: "It might be challenging to align teaching materials with holographic teachers. We will need to dedicate time and resources to adapting our existing curriculum and materials to this technology."*

In the study, participants' views on how holographic teachers will affect current teacher roles were grouped under seven main themes. The theme with the highest frequency, changes in teacher roles (f=14), suggests that the use of holographic teachers will lead to a redefinition of traditional teacher roles. In this context, it is noted that teachers will focus more on guidance and mentorship rather than simply transmitting information. The theme of a decrease in traditional teacher-student interaction (f=8) reflects concerns that technology may limit face-to-face communication and make it harder to meet students' emotional needs. The theme of increased guidance and mentorship roles (f=6) indicates that, when working alongside holographic teachers, teachers will focus on providing individual support and motivation to students. The theme of digital skills (f=5) emphasizes that teachers need to enhance their digital competencies to effectively utilize holographic teachers. The theme of a reduced workload (f=4) suggests that, as holographic teachers take on certain responsibilities, teachers may have more time for one-on-one interactions, thereby easing their workload. The theme of teachers' professional development (f=3) highlights that, to effectively use holographic teachers, teachers must continually participate in professional development programs. Lastly, the theme of the development of teaching materials and methods (f=2) indicates that the use of holographic teachers may necessitate adapting existing curricula and materials to new technologies. Overall, participants' expectations regarding the impact of holographic teachers on current teacher roles include both positive changes—such as a stronger focus on guidance and mentorship, the enhancement of digital skills,

and a reduced workload—and certain challenges, such as decreased traditional teacher-student interaction and the need to adapt instructional materials to technology. These findings underscore the importance of teachers' professional development and the enhancement of their digital competencies as the role of holographic teachers reshapes the educational landscape.

Table 7: Participants' Views on "What are your expectations regarding future trends and innovations related to the use of holographic teachers in education?"

Theme	Frequency (f)
Combination of Artificial Intelligence and Emotional Intelligence	16
Global and Multicultural Classrooms	12
Empathetic and Human-like Behaviors	10
Biometric Feedback Systems	8
Real-time Language Translation and Multilingual Support	6
Holographic Educational Communities	3
Digital Art and Creativity Workshops	3
Global Project-based Learning	2

- *P3: "AI-supported holographic teachers should be able to understand students' emotional states and approach them with more empathy."*
- *P6: "Global and multicultural classrooms can allow students from different countries to learn together through holographic teachers. This increases cultural diversity and understanding."*
- *P8: "Biometric feedback systems that enable holographic teachers to instantly detect students' stress levels or attention spans and adjust the lessons accordingly would be very beneficial."*
- *P16: "Thanks to real-time language translation, holographic teachers can teach in different languages and provide multilingual support. This is a major advantage for international classrooms."*
- *P18: "Holographic teachers that develop empathetic and human-like behaviors can form more natural and sincere relationships with students."*

In the study, participants' expectations regarding the use of holographic teachers in education were grouped under eight main themes. The themes with the highest frequency—combining artificial intelligence and emotional intelligence (f=16) and global and multicultural classrooms (f=12)—stand out prominently. Participants expect holographic teachers to use artificial intelligence to analyze students' emotional states, thus demonstrating a more empathetic and human-like approach. This capability is anticipated to better meet students' emotional needs and support the learning process. The theme of global and multicultural classrooms aims to enhance cultural diversity and understanding by inviting expert holographic teachers from different countries into the classroom. In this way, students will have the opportunity to learn about various cultures and perspectives. Another significant theme is empathetic and human-like behaviors (f=10), which suggests that, thanks to advanced AI, holographic teachers could establish more natural and supportive relationships with students. The theme of biometric feedback systems (f=8) proposes that holographic teachers continuously monitor students' physical and emotional states in real-time, allowing them to adjust the lesson's pace accordingly. This feature is expected to improve learning efficiency by ensuring that students are in the most productive learning conditions. Real-time language translation and multilingual support (f=6) enable holographic teachers to teach in different languages, providing a crucial advantage, particularly for international classrooms. Among the themes with lower frequencies are holographic educational communities and networking (f=3), digital art and creativity workshops (f=3), and global project-based learning (f=2). The establishment of holographic educational communities encourages the exchange of knowledge and experience worldwide, while digital art and creativity workshops allow students to develop their artistic talents. Global project-based learning aims to increase collaboration skills and cultural interaction by having students work on projects with peers from around the globe. Overall, participants' expectations regarding the use of holographic teachers in education show a strong focus on integrating technology with humanistic and cultural dimensions to support students' emotional and academic development. These findings indicate that

holographic teachers may play a significant role in the future of education and enrich learning processes through various innovations.

4. Discussion and Conclusion

This study aimed to examine teachers' views on the use of holographic teachers in the education of the future. The findings obtained from interviews conducted with middle school teachers provide a comprehensive understanding of the potential of holographic teachers in education, methods of integration, their effects on students, possible challenges, their impact on current teacher roles, and future trends.

Research findings indicate that holographic teachers have the potential to lead transformative changes in the field of education by contributing to the development of innovative pedagogical practices. Teachers emphasized the capability of hologram technology to offer students a global learning environment. Notably, the most prominent opinion among participants regarding the integration of holographic teachers into lessons was the reenactment of historical figures. This method enables students to experience historical events and personalities more vividly. In this context, it reinforces the potential of holographic teachers to enrich lesson materials and provide students with more tangible and interactive learning experiences.

According to teachers' views, holographic teachers have positive effects on students, such as high engagement and more interactive lessons. The increase in students' technological curiosity and their heightened learning motivation highlight the advantages of hologram technology in learning processes. By making lessons more dynamic, holographic teachers can increase students' interest in the subject matter. However, some teachers pointed out that negative effects such as distraction and technology addiction should not be overlooked. Concerns that students may become distracted and risk developing a dependency on technology during interactions with holographic teachers suggest the need for a balanced approach to using this technology.

The greatest challenges in using holographic teachers include technological infrastructure and access issues, as well as high costs. Adapting teachers to this new technology and students' responses to the technology were also identified as significant challenges. Technological infrastructure and access issues stem from the high costs of the hardware and software investments required for the effective use of hologram technology. Moreover, the need for special training to help teachers adapt to this new technology will complicate the adaptation process. Students' reactions to technology indicate that while some may find this innovative method exciting, others may remain uninterested due to inadequate technological proficiency. These challenges underscore the necessity of infrastructure investments, as well as adequate training and support for teachers, in order for hologram technology to be widely adopted.

The research findings indicate that holographic teachers may redefine current teacher roles. Teachers noted that they would focus more on guidance and mentorship rather than simply transmitting information. This suggests that teachers need to improve their digital skills and participate in professional development programs. Additionally, concerns were expressed about a decrease in traditional teacher-student interaction. With the use of holographic teachers, it was suggested that teachers' one-on-one communication with students could become more limited, potentially making it harder to meet students' emotional needs. This situation requires teachers to enhance their digital competencies and continuously participate in professional development programs to use hologram technology effectively.

Among the participants' expectations, the combination of artificial intelligence and emotional intelligence, global and multicultural classrooms, and empathetic, human-like behaviors stand out. It is expected that AI-supported holographic teachers will be able to understand students' emotional states and approach them with greater empathy. This feature would better meet students' emotional needs, thereby supporting their learning processes. The theme of global and multicultural classrooms aims to increase cultural diversity and understanding by inviting expert holographic teachers from different countries into the classroom. Furthermore, innovations such as biometric feedback systems and real-time language translation enhance the potential of hologram technology to create more personalized and inclusive educational environments. These trends suggest that holographic teachers

can go beyond being mere tools for transmitting information and also contribute to students' emotional and social development.

Overall, it is concluded that the use of holographic teachers in education presents both significant opportunities and certain challenges. While the technology's innovative possibilities diversify students' learning experiences, issues such as cost, infrastructure, and adaptation need to be overcome. In this context, cooperation among educational institutions, policymakers, and technology developers is essential for the effective use of hologram technology in education.

In addition, future research could provide a more comprehensive understanding of the potential of holographic teachers in education by including the perspectives of teachers from different countries and educational levels. It is also recommended to employ quantitative research methods to evaluate the long-term effects of hologram technology. Such research would help assess the impact of hologram technology on education in a more generalizable manner.

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Quality Management Process of the 7 Habits of Students in Sarasas Affiliated Schools

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Abstract
This research aimed to examine the quality management process of the 7 Habits of students in Sarasas affiliated schools through four objectives: 1) Assess the implementation level of the quality management process in the 7 Habits of students across Sarasas affiliated schools and 11 administrative areas. 2)Evaluate the behavioral characteristics of students related to the 7 Habits. 3)Analyze the relationship between the quality management process and student behavior. 4)Develop guidelines for improving the quality management process in the 7 Habits of students. The study used a 5-level rating scale questionnaire and structured interviews for data collection. Statistical methods included mean, standard deviation, and Pearson's correlation coefficient. Research Findings: 1) The quality management process implementation was at a high level, with the Do (Implementation) stage ranking the highest; 2) Across all 11 administrative areas, the practice level was high, with Administrative Area 12 performing the best; 3) The behavioral characteristics of students were also high, with Habit 6 (Teamwork) ranking the highest, followed by Habit 5 (Seeking Synergy) and Habit 1 (Taking Initiative); 4) A positive correlation ($p < .01$) was found between the quality management process and student behavior. 5) The PDCA model guides process improvement: Plan: Set policies, goals, and conduct stakeholder meetings, Do: Implement character development activities, Check: Assess behavior using evaluation tools, Act: Report findings and integrate continuous improvements.

Keywords: Quality Management Process, 7 Habits of Students, PDCA Cycle, Character Development

1. Introduction

In today's rapidly evolving world, education plays a crucial role in shaping individuals who contribute positively to society. Morality and ethics are essential in fostering a well-balanced and responsible citizenry, ensuring a harmonious and sustainable social environment. The National Education Act B.E. 2542 (1999) emphasizes the development of individuals in all aspects—physical, mental, intellectual, and moral—highlighting the necessity of integrating ethical education alongside academic learning. To align with this vision, Sarasas Affiliated Schools have adopted Stephen R. Covey's 7 Habits framework as a guiding principle for character development among students.

The 7 Habits have been systematically implemented in Sarasas schools through structured planning, targeted activities, and ongoing evaluation. This initiative aims to cultivate positive behaviors and essential life skills among students. However, challenges remain in the management and execution of this program, particularly in fostering collaboration among administrators, teachers, and parents to ensure its effectiveness. Addressing these challenges requires a thorough understanding of the quality management process behind the 7 Habits framework and its impact on student behavior.

This research aims to examine the quality management process of the 7 Habits in Sarasas affiliated schools through the following objectives: Assess the quality management process of the 7 Habits both overall and across 11 administrative areas. Evaluate students' behavioral characteristics related to the 7 Habits. Analyze the relationship between the quality management process and student behavior. Develop guidelines to enhance the quality management process, ensuring sustainable behavioral development in students.

By exploring these factors, this study seeks to provide insights into strengthening the 7 Habits implementation framework, enhancing student character development, and promoting ethical and responsible behavior among students. The findings of this research will contribute to the improvement of educational management strategies, fostering a more effective and holistic approach to character education in Sarasas affiliated schools.

2. Research Objectives

1. To examine the quality management process of the 7 Habits of students in Sarasas affiliated schools, both overall and across 11 administrative areas.
2. To assess the behavioral characteristics of students in relation to the 7 Habits, both overall and across 11 administrative areas.
3. To analyze the relationship between the quality management process of the 7 Habits of students and their behavioral characteristics in Sarasas affiliated schools.
4. To explore guidelines for improving the quality management process of the 7 Habits of students in Sarasas affiliated schools.

3. Research Hypotheses

The quality management process of the 7 Habits of students in Sarasas affiliated schools has a positive relationship with the behavioral characteristics of students in these schools.

4. Literature Review

Samran Srikhamoon (2022) stated that morality and ethics are often mentioned together, leading to the misconception that they are synonymous. However, morality refers to abstract virtues, while ethics is the practical application of those virtues in behavior. Understanding this distinction is essential for educational administrators. Furthermore, Samran Srikhamoon (2022) emphasized that morality and ethics serve as fundamental tools for human development. Since societal problems often originate from human behavior, solutions must focus on improving individuals' knowledge, morality, and problem-solving skills. A well-educated individual with ethical values and the ability to navigate technological advancements and economic competition can contribute positively to society. Therefore, education must integrate knowledge with moral values to cultivate both capable and virtuous citizens.

Sunit Asajit (2022) highlighted that ethics governs observable individual behaviors. Similarly, Kanya Weerayawattana (2019) suggested that ethical development can be achieved through education, self-analysis, and self-discipline.

Jean Piaget (as cited in Nattawat Chantorothorn, 2018) explained that moral and ethical development stems from motivation to integrate oneself into society. Ethical reasoning evolves with cognitive maturity and follows three stages: pre-moral, obedience-based morality, and self-principled morality.

Maslow (1987: 15) (as cited in Thanika Kreethaphon, 2017) introduced the Humanistic Psychology Theory, which suggests that humans possess inherent goodness and a hierarchy of needs. These needs progress from basic physiological survival to safety, social belonging, esteem, and self-actualization.

Chutima Rakbanglaem (2016: 14-15) argued that Thai moral principles are largely derived from Buddhist teachings. As educational administrators have responsibilities toward both their families and society, they should first adopt fundamental moral principles to effectively lead their organizations.

Draft (2004) (as cited in Chutima Rakbanglaem, 2016: 14, 16) emphasized that ethical leadership is essential for organizational management. Ethical values can be cultivated and developed in administrators and staff to ensure sustainable moral governance.

Kohlberg (2000: 159) (as cited in Duangrudee Siripun, 2015) expanded on Piaget's Theory of Moral Development, categorizing moral development into three levels: pre-conventional, conventional, and post-conventional morality. Arkom Makmeesub (2020: 312) identified 11 essential ethical qualities for educational administrators: compassion, integrity, justice, honesty, self-discipline, rationality, leadership, governance skills, accountability, and professional discipline.

4.1. Summary

Morality, ethics, and desirable characteristics are crucial personal attributes that should be nurtured from an early age. Schools play a vital role in instilling these values, ensuring students develop ethical habits that become an integral part of their character throughout their lives.

4.2. Quality Management with Deming's PDCA Cycle

Deming's Quality Management Theory is based on a continuous improvement cycle known as PDCA (Plan-Do-Check-Act). W. Edwards Deming was an American statistician who played a crucial role in Japan's industrial resurgence post-World War II. Under General MacArthur's directive, Deming introduced statistical quality control techniques that revolutionized Japanese manufacturing, leading to the establishment of the Deming Prize in 1951 for excellence in quality management.

Deming (2004: 15) stated that quality management is a continuous process designed to improve products and services. The PDCA cycle consists of four essential steps:

1. Plan – Identify the root cause of a problem and devise a strategic improvement plan.
2. Do – Implement the plan or conduct pilot testing on a small scale.
3. Check – Evaluate the effectiveness of the implementation, identify errors, and extract lessons learned.
4. Act – Standardize successful changes or reapply the PDCA cycle based on insights gained.

Although the PDCA cycle follows a sequential process, it can begin at any stage depending on the problem and organizational needs. By comparing current conditions with set objectives, institutions can determine necessary actions to align with their strategic goals.

4.3. Developing Habits Based on Stephen R. Covey's 7 Habits Framework

Stephen R. Covey (2004) defined habits as consistent behaviors influenced by knowledge, skills, and attitudes. His 7 Habits of Highly Effective People, introduced in 1989 and revised in 2004, serve as a framework for personal and professional success. Covey emphasized that effective habits can be developed systematically, enabling individuals to achieve true success and happiness.

The 7 Habits are:

1. Be Proactive – Take responsibility for actions, initiate solutions, and adapt to change.
2. Begin with the End in Mind – Set clear goals and align actions with long-term objectives.

3. Put First Things First – Prioritize important tasks to maximize productivity.
4. Think Win-Win – Foster cooperation and ensure mutual benefits in decision-making.
5. Seek First to Understand, Then to Be Understood – Develop active listening and empathy.
6. Synergize – Collaborate effectively by valuing diverse perspectives.
7. Sharpen the Saw – Continuously improve physically, mentally, emotionally, and socially.

These habits help educators, administrators, and students cultivate leadership, responsibility, and ethical decision-making. Implementing them in schools aligns with the Deming Quality Cycle (PDCA), reinforcing structured planning, execution, evaluation, and refinement in educational management. By integrating the 7 Habits, students develop strong character, leadership skills, and social responsibility, contributing to a progressive and ethical society.

5. Population and Sample

1. Population: Teachers from 45 Sarasas Affiliated Schools, totaling 5,151 teachers.
2. Sample: A total of 371 teachers from the 45 Sarasas schools, selected using stratified random sampling and simple random sampling based on Yamane's (1967) formula.

6. Research Instruments

The research utilized the following instruments:

1. Questionnaire (Four Sections):
    - Section 1: Personal information about respondents categorized by 11 administrative areas.
    - Section 2: Assessment of quality management processes for the 7 Habits, using a 5-point Likert scale (1 = lowest, 5 = highest).
    - Section 3: Evaluation of students' behavioral characteristics based on the 7 Habits, also using a 5-point Likert scale.
    - Section 4: Open-ended questions to gather suggestions for improving the quality management process.
2. Structured Interviews: Conducted with school administrators to explore quality management strategies based on the PDCA model.

7. Development of Research Instruments

- The questionnaire was developed by reviewing relevant theories and literature, consulting experts, and testing for content validity (IOC > 0.6) and reliability (Cronbach's alpha).
- A trial was conducted with 30 educators before finalizing the questionnaire.

8. Data Collection and Analysis

- Data Collection:
    - Official approval was sought before distributing questionnaires.
    - Quantitative data was collected through questionnaires from teachers.
    - Qualitative data was collected through open-ended questions and structured interviews with 5 school administrators.
- Data Analysis:
    - Descriptive statistics: Frequency, percentage, mean, and standard deviation.
    - Inferential statistics: Pearson's correlation to examine the relationship between quality management processes and student behaviors.

9. Statistical Analysis

1. Instrument Quality Assessment

- Content validity (IOC).
- Reliability (Cronbach's alpha).

2. Data Analysis
   - Descriptive statistics: Mean, standard deviation.
   - Correlation Analysis: Pearson's correlation was used to test the hypothesis regarding the relationship between quality management processes and student behaviors.

10. Data Analysis

Analysis of the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools Overall and by Administrative Area.

Table 1: Mean, Standard Deviation, Interpretation, and Ranking of the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools (n=371)

	Quality Management Process for the 7 Habits	Performance Level		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Planning (Plan)	4.27	0.37	High	2
2	Implementation (Do)	4.28	0.53	High	1
3	Evaluation (Check)	4.23	0.63	High	3
4	Action (Act)	4.15	0.48	High	4
	Overall (X_{tot})	4.23	0.47	High	

From Table 1 , the overall quality management process for the 7 Habits in Sarasas Affiliated Schools is at a high level ($\bar{x}$ = 4.23, S.D. = 0.48).

When considering each aspect in descending order of mean score:

1. Implementation (Do) is the highest ($\bar{x}$ = 4.28, S.D. = 0.53).
2. Planning (Plan) follows closely ($\bar{x}$ = 4.27, S.D. = 0.37).
3. Evaluation (Check) is also at a high level ($\bar{x}$ = 4.23, S.D. = 0.63).
4. Action (Act) ranks the lowest but remains at a high level ($\bar{x}$ = 4.15, S.D. = 0.48).

These findings indicate that the Implementation (Do) phase is the most effectively executed aspect, while the Action (Act) phase, which involves applying evaluation results into practice, is relatively lower but still at a high level.

Analysis of the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools by Administrative Area.

Table 2: Mean, Standard Deviation, Interpretation, and Ranking of the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools by Administrative Area (n=371)

Administrative Area	Performance Level		Interpretation	Rank
	$\bar{x}$	S.D.		

Area 1	4.05	0.14	High	10
Area 2	3.95	0.13	Moderate High	11
Area 3	4.21	0.52	High	6
Area 4	4.45	0.42	High	2
Area 5	4.20	0.52	High	7
Area 6	4.30	0.59	High	4
Area 7	4.38	0.59	High	3
Area 8	4.22	0.53	High	5
Area 9	4.09	0.60	High	8
Area 10	4.06	0.23	High	6
Area 12	4.60	0.39	Very High	1
Overall Mean	4.23	0.47	High	

From Table 2, the overall quality management process for the 7 Habits across the 11 administrative areas is at a high level ($\bar{x}$ = 4.23, S.D. = 0.47). When ranking the administrative areas by mean score: Area 12 demonstrates the highest level of implementation at a very high level ($\bar{x}$ = 4.60, S.D. = 0.39). Area 4 follows, performing at a high level ($\bar{x}$ = 4.45, S.D. = 0.42). Area 2 has the lowest performance, at a moderate level ($\bar{x}$ = 3.95, S.D. = 0.13). These findings suggest that while most administrative areas exhibit high levels of quality management implementation, Area 12 stands out as the strongest performer, whereas Area 2 shows room for improvement in implementing the 7 Habits framework. Analysis of the Behavioral Level of the 7 Habits of Students in Sarasas Affiliated Schools (Overall and by Administrative Areas).

Table 4: Mean, Standard Deviation, Interpretation, and Ranking of the Behavioral Level of the 7 Habits of Students in Sarasas Affiliated Schools (Overall)

7 Habits of Students in Sarasas Affiliated Schools		Performance Level		Interpretation	Rank
		$\bar{x}$	S.D.		
1	(Be Proactive)	4.15	0.47	High	7
2	(Begin with the End in mind)	4.20	0.64	High	5
3	(Put first Things first)	4.18	0.63	High	6
4	(Think Win-Win)	4.21	0.66	High	4
5	(Seek First to Understand, Then to Be Understood)	4.28	0.62	High	2
6	(Synergize)	4.30	0.59	High	1
7	(Sharpen the saw)	4.22	0.55	High	3
	Overall Mean (X_{tot})	4.22	0.56	High	

The overall behavioral level of the 7 Habits among students in Sarasas Affiliated Schools is at a high level ($\bar{x}$ = 4.22, S.D. = 0.56). Ranking the habits from highest to lowest: Habit 6 (Synergize - Teamwork and Collaboration) had the highest mean score ($\bar{x}$ = 4.30, S.D. = 0.59). Habit 5 (Seek First to Understand, Then to Be Understood - Empathy and Active Listening) followed closely ($\bar{x}$ = 4.28, S.D. = 0.62). Habit 7 (Sharpen the Saw - Continuous Self-Improvement) ranked third ($\bar{x}$ = 4.22, S.D. = 0.55). Habit 4 (Think Win-Win - Mutual Benefit Mindset) scored slightly lower but still remained at a high level ($\bar{x}$ = 4.21, S.D. = 0.66). Habit 2 (Begin with the End in Mind - Goal Setting) ($\bar{x}$ = 4.20, S.D. = 0.64) and Habit 3 (Put First Things First - Prioritization) ($\bar{x}$ = 4.18, S.D. = 0.63) followed. Habit 1 (Be Proactive - Taking Initiative) ranked the lowest but still maintained a high level ($\bar{x}$ = 4.15, S.D. = 0.47). Conclusion The results indicate that students in Sarasas Affiliated Schools demonstrate high engagement in all 7 Habits, with the strongest behaviors observed in teamwork (Synergize) and empathy (Seek First to

Understand, Then to Be Understood). The findings suggest that while all habits are well-practiced, proactive behavior (Be Proactive) showed the lowest level of engagement, indicating an area for further development.

Table 5: Mean, Standard Deviation, Interpretation, and Ranking of the Behavioral Level of the 7 Habits of Students in Sarasas Affiliated Schools by Administrative Area (*n=371)*

Administrative Area	Performance Level		Interpretation	Rank
	$\bar{x}$	S.D.		
Area 1	4.19	0.42	High	6
Area 2	4.12	0.40	High	8
Area 3	4.09	0.47	High	9
Area 4	4.41	0.55	High	2
Area 5	4.33	0.55	High	3
Area 6	4.14	0.64	High	7
Area 7	4.22	0.61	High	4
Area 8	4.20	0.65	High	5
Area 9	4.01	0.66	High	11
Area 10	4.06	0.63	High	10
Area 12	4.56	0.51	Very High	1
Overall Mean	4.22	0.56		

The overall behavioral level of the 7 Habits among students in Sarasas Affiliated Schools across all 11 administrative areas is at a high level ($\bar{x}$ = 4.22, S.D. = 0.56). The highest behavioral level was observed in Administrative Area 12, with a very high rating ($\bar{x}$ = 4.56, S.D. = 0.51). Administrative Area 4 ranked second ($\bar{x}$ = 4.41, S.D. = 0.55), followed by Administrative Area 5 ($\bar{x}$ = 4.33, S.D. = 0.55). The lowest behavioral level was found in Administrative Area 9 ($\bar{x}$ = 4.01, S.D. = 0.66), though still at a high level. Conclusion: The findings indicate that students across all administrative areas exhibit a strong engagement with the 7 Habits, with Administrative Area 12 demonstrating the highest level of behavioral development. The results suggest a consistent and effective implementation of the 7 Habits across Sarasas Affiliated Schools, with some variations in different areas that may require further investigation and targeted improvement efforts.

Results of the Study on the Relationship Between the Quality Management Process of the 7 Habits and Student Behavioral Characteristics in Sarasas Affiliated Schools

Table 6: Correlation Coefficients Between the Quality Management Process of the 7 Habits and Student Behavioral Characteristics in Sarasas Affiliated Schools

Variable	X_1	X_2	X_3	X_4	X_{tot}	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_{tot}
X_1	1	.781**	.692**	.742**	.838**	.647**	.654**	.633**	.694**	.675**	.664**	.708**	.708**
X_2		1	.916**	.878**	.976**	.748**	.791**	.746**	.780**	.787**	.757**	.742**	.812**
X_3			1	.883**	.956**	.726**	.863**	.808**	.781**	.794**	.782**	.737**	.835**
X_4				1	.946**	.741**	.747**	.674**	.698**	.763**	.702**	.638**	.752**
X_{tot}					1	.785**	.831**	.783**	.784**	.820**	.788**	.750**	.841

The analysis of the relationship between the quality management process of the 7 Habits (Xtot) and student behavioral characteristics (Ytot) in Sarasas Affiliated Schools revealed a statistically significant positive correlation at the .01 level, with a correlation coefficient of .841. Additionally, when examining individual aspects, the results indicate that: Planning (Plan) (r X1 Ytot = .708) has a statistically significant positive correlation with overall student behavioral characteristics at the .01 level. Implementation (Do) (r X2 Ytot = .812) shows a statistically significant positive correlation with overall student behavioral characteristics at the .01 level. Evaluation (Check) (r X3 Ytot = .835) demonstrates a statistically significant positive correlation with overall student behavioral characteristics at the .01 level. Applying Evaluation Results (Act) (r X4 Ytot = .752) exhibits a statistically significant positive correlation with overall student behavioral characteristics at the .01 level.

Conclusion: These findings suggest that a well-structured quality management process in implementing the 7 Habits is strongly associated with positive student behavioral development in Sarasas Affiliated Schools. The evaluation phase (Check) had the highest correlation (.835), indicating that a strong assessment and feedback system is crucial in shaping students' habits and behaviors.

10.1. Results of the Analysis of the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools

Based on the synthesis of interviews with **five experts**, the researcher applied the **Content Analysis** technique to present the findings as a structured narrative. The details are as follows:

Planning Phase (P): This phase includes the following activities:

1. Conducting surveys and reviewing problems, suggestions, and past performance results, both in terms of administrative activities and student behavioral habits.
2. Establishing written policies and objectives for the **7 Habits** implementation.
3. Organizing **workshops and meetings** for all relevant stakeholders at different levels.

Implementation Phase (D): This phase involves:

1. Assigning responsibilities according to the policy for schools to implement.
2. Schools are setting up **operational calendars, monitoring progress, supervising, and motivating practitioners**.
3. Conducting **various activities to instill desirable habits**, ensuring they align with the **natural development** of students across different age groups.

Evaluation Phase (C): The evaluation phase consists of:

1. Establishing **assessment formats** for student behavioral habits, including **quantitative** and **qualitative** evaluations.
2. Developing **assessment tools** that align with the behavioral evaluation framework.
3. **Reporting and summarizing** evaluation results along with recommendations for relevant stakeholders.

Application of Evaluation Results (A):

1. Preparing a **summary report** on student behavioral habits and presenting it to relevant stakeholders, as well as disseminating the findings to associated agencies and organizations.
2. Collecting **recommendations** for integration into the following year's **operational plan**.
3. Continuously developing and **enhancing the desirable habits** of students.

11. Discussion of Research Findings

Discussion on the Quality Management Process for the 7 Habits of Students in Sarasas Affiliated Schools

Section 1

1.1 Overall Level of Quality Management Process

The quality management process for the 7 Habits of students in Sarasas Affiliated Schools was found to be at a high level overall. This reflects the schools' strong commitment and effective implementation of strategies to

develop students' positive habits in line with the 7 Habits framework. When considering specific aspects, the "Do" (Implementation) phase had the highest mean score, indicating the schools' success in applying the 7 Habits principles in daily practice for students, teachers, and school staff. However, the "Act" (Application of Evaluation Results) phase had the lowest mean score, suggesting that while the implementation is strong, there is still room for improvement in applying assessment results for further development. This aligns with Covey (2008), who emphasized that the 7 Habits require continuous practice in real-life situations through a Plan-Do-Check-Act (PDCA) cycle to ensure sustainable outcomes.

1.2 Differences in Implementation Across Administrative Areas

The implementation of the 7 Habits varied across the 11 administrative areas, with Area 12 having the highest level of implementation and Area 2 the lowest. This may be due to differences in familiarity with the 7 Habits framework among students and teachers in different areas, highlighting the need for additional training and reinforcement in certain regions.

Section 2

The behavioral habits of students were also assessed, with "Habit 6: Synergize" (Teamwork and Collaboration) ranking the highest, while "Habit 1: Be Proactive" (Taking Initiative) ranked the lowest. This indicates that while students demonstrated strong teamwork skills, they may need more encouragement to take initiative and act independently.

Overall, the 7 Habits behavioral development was rated at a high level, reflecting the effectiveness of activities designed to instill these habits in students. This is consistent with Stephen R. Covey's (1989) framework in *The 7 Habits of Highly Effective People*, which emphasizes both personal success and collaborative skills as key to long-term effectiveness.

The high ranking of Habit 6 (Synergize) suggests that students are actively engaging in teamwork and collaboration, reinforcing Covey's (1989) argument that synergy enhances group potential and minimizes conflict. This finding is also in line with Zhang et al. (2016), who found that teamwork fosters problem-solving skills and effective communication among students.

Section 3: Correlation Between Quality Management and Student Behavior

The study found a strong positive correlation ($r = .841$, $p < .01$) between the quality management process of the 7 Habits and students' behavioral development, indicating that effective management leads to improved student habits.

The structured PDCA cycle (Plan-Do-Check-Act) in schools played a crucial role in ensuring that the 7 Habits strategies were effectively implemented and continuously improved. A well-organized management approach, with clear planning, execution, and evaluation, contributed to an environment that reinforced positive student behavior.

This aligns with Covey's (1989) assertion that habit formation requires consistent practice and a strong support system. It also supports the findings of Chen, Wang, & Cao (2015), who demonstrated that a structured quality management system positively impacts student behavior development.

Section 4: Insights from In-Depth Interviews

Interviews with five school administrators provided insights into the best practices for managing the 7 Habits implementation:

Planning (Plan):

- Collaboration between teachers, students, and parents in setting visions and activities aligned with the 7 Habits.
- Establishing clear objectives, priorities, leadership skills, and a learning culture that supports habit development.
- Leveraging technology to support habit formation and tracking progress.

Implementation (Do):

- Organizing training sessions, workshops, and hands-on practice for teachers, students, and parents to ensure an understanding of 7 Habits principles.
- Encouraging students to set goals, maintain habit-tracking journals, work in teams, and engage in mindfulness exercises such as yoga.
- Utilizing mobile applications to monitor habit progress.

Evaluation (Check):

- Assessing habit development based on student behavior in areas such as goal-setting, prioritization, teamwork, and personal growth.
- Conducting assessments through peer evaluations, teacher feedback, and student self-assessments.

Application of Evaluation Results (Act):

- Modifying and improving programs based on assessment results and feedback.
- Enhancing strategies for team collaboration, active listening, and the integration of technology to reinforce habit development.

13. Recommendations

13.1. Recommendations for Practical Implementation

Since the 7 Habits development program has been an ongoing initiative in Sarasas Affiliated Schools, it should not be treated as a new project but rather as a continuous improvement process. The following measures should be implemented:

Planning (Plan)

1. Establish the 7 Habits development as an official school policy, integrating it into the student governance framework. Students should be categorized into three groups based on their habit development: Trust Group, Concern Group, and Close Monitoring Group.
2. Set a target where 80% of students demonstrate the desired 7 Habits and belong to the Trust Group.
3. Incorporate the 7 Habits characteristics as a key quality assurance criterion in assessing student development within the school.
4. Appoint a working committee to draft and develop a 7 Habits implementation manual for Sarasas Affiliated Schools.

Implementation (Do)

1. 7 Habits development should be age-appropriate:
    - Kindergarten to Grade 3: Focus on Habits 1-3.
    - Grades 4-6: Emphasize Habits 1-6.
    - Grades 7-12: Cover Habits 1-7 comprehensively.
    - This approach ensures effective activity selection tailored to students' developmental stages.
2. Assign district directors and school principals to be responsible for student behavioral outcomes within their respective schools and administrative districts.
3. Schools should appoint a teacher task force to implement the 7 Habits development program according to the official guidelines and manual.

Evaluation (Check)

- Behavioral assessment of students in all 7 Habits should be conducted individually and rigorously, following standardized evaluation methods and tools.

Application of Evaluation Results (Act)

1. Recommendations from assessment and implementation should be formally integrated into the annual operational plan for the following academic year.
2. In addition to reporting the implementation outcomes to relevant stakeholders, schools should position the 7 Habits quality management process as an educational innovation or Best Practice to contribute to external quality assurance standards.

13.2. Recommendations for Future Research

1. Future studies should explore other factors influencing student habit development, such as:
    - School environment
    - Family background
    - Parental support

    These factors may impact students' perception and practice of the 7 Habits in different ways.
2. Further research should investigate key factors influencing the quality management process of the 7 Habits development in Sarasas Affiliated Schools to enhance long-term effectiveness and sustainability.

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Development Guidelines for Enhancing the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools

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Abstract
This study aimed to (1) assess the effectiveness of educational management in Sarasas affiliated area 2 schools, (2) examine factors influencing its effectiveness, and (3) propose improvement guidelines. The sample included 180 teachers and administrators, determined using the G*Power program with a 5% margin of error and a test power of 0.95. Additionally, three school administrators were selected via purposive sampling. Research instruments included questionnaires addressing personal factors, levels of effectiveness in academic, budget, personnel, and general administration, and factors related to administrators, learners, teachers, and school environments. Data were analyzed using descriptive statistics, Pearson's correlation, stepwise multiple regression, and content analysis. Findings revealed that factors influencing educational management effectiveness were at a high level, ranked as follows: school environment, administrators, teachers, and learners. Educational management effectiveness was also high, with academic administration scoring the highest, followed by general, personnel, and budget administration. Improvement guidelines include promoting student-centered learning and 21st-century skills for learners, enhancing professional development and motivation for teachers, fostering visionary leadership and resource management for administrators, and optimizing school environments to support effective learning and mental well-being.

Keywords: Development Guidelines, Educational Management Effectiveness, Learning Factors

1. Introduction

Education plays a crucial role in enhancing individual potential and fostering national development. However, Thailand faces challenges in economic, technological, and social transformations, necessitating strategic adaptation. This includes increased investment in science, technology, and innovation, alongside workforce upskilling to meet evolving industry demands.

In the 21st century, education is a key driver of sustainable development. School administrators play a vital role in improving education quality by demonstrating visionary leadership and modern management skills. Although fundamental education is critical for national development, existing challenges such as educational inequality, quality discrepancies, and inefficient resource allocation persist. These issues highlight the need for educational reform, teacher training and development, and decentralized school management.

Sarasas Affiliated Schools are private educational institutions offering programs from preschool to higher education, emphasizing continuous educational management improvement. Given this context, the researcher, as a teacher in Sarasas Affiliated Area 2, seeks to explore strategies for enhancing the effectiveness of educational management within these schools. The findings of this study aim to serve as a foundation for developing more efficient and impactful educational management practices within Sarasas Affiliated Schools.

2. Research Objectives

1.2.1 To study the level of educational management effectiveness in Sarasas Affiliated Area 2 schools.

1.2.2 To examine the factors influencing the effectiveness of educational management in Sarasas Affiliated Area 2 schools.

1.2.3 To explore guidelines for improving the effectiveness of educational management in Sarasas Affiliated Area 2 schools.

3. Research Hypotheses

In this study, the researcher formulated the following research hypothesis:

1.3.1 The factors related to the school environment, administrators, learners, and teachers influence the effectiveness of educational management in Sarasas Affiliated Area 2 schools.

4. Literature Review

4.1. Definition of Educational Management Effectiveness

Ratchaphon Chomtraikhup (2020) stated that educational management effectiveness refers to a school's ability to efficiently manage its operations to achieve institutional goals. The most critical aspect is student achievement, ensuring that students meet academic expectations. Additionally, school effectiveness encompasses other objectives such as student well-being, positive attitudes toward the school, parental trust in school quality, and teacher satisfaction and unity in the workplace.

Naowarat Sirithethangkul (2019) defined educational management effectiveness as the capability of school administrators, teachers, and personnel to perform their duties appropriately within their given context and environment to meet institutional goals. Success is reflected in students' high academic achievement, positive attitudes, and strong morale within the school community.

Thikamporn Wannathongsuk (2017) described educational management effectiveness as the degree of success in achieving school objectives, considering both outputs and outcomes. This definition includes the satisfaction of educators and the tangible academic achievements of students.

Phaitoon Prommakul (2017) viewed educational management effectiveness as the ability to accomplish objectives and goals by assessing how well a school provides quality education that aligns with national educational standards and societal needs. It also includes the institution's ability to resolve challenges, adapt to environmental changes, and ensure that students can integrate into society successfully.

Ruangchai Pariban (2017) defined educational management effectiveness as the successful attainment of institutional goals through efficient resource utilization. A school's effectiveness is primarily determined by student achievement and the fulfillment of additional school objectives, such as student well-being, positive school attitudes, parental trust, and teacher satisfaction and cooperation.

Armstrong and Others (1989) defined educational management effectiveness as students achieving academic performance above the standard criteria.

Hoy and Misgel (1991) stated that educational management effectiveness involves producing graduates with high academic achievement, positive attitudes, adaptability to their environment, and an overall capacity to resolve institutional challenges.

Hoy and Ferguson (1985) outlined five key components of educational effectiveness: Student curiosity and self-directed learning. Teacher job satisfaction. Teachers' ability to utilize media, innovation, and technology. Efficient resource allocation. Institutional adaptability to internal and external environmental changes. In ConclusionEducational management effectiveness refers to a school's ability to achieve its objectives efficiently. This encompasses students meeting academic standards, teacher and staff satisfaction, and a well-organized management system capable of solving institutional challenges. Key components include academic administration, financial management, personnel management, and general administration.

5. Population and Sample

5.1. Population

The population for this study consisted of 337 administrators and teachers from Sarasas Affiliated Area 2 schools.

5.2 Sample

The sample size was determined using the G*Power version 3.1.9.2 program, employing the Correlation Bivariate Normal Model with a power analysis of 0.99, a statistical significance level of 0.01, and a medium effect size of 0.3 (Cohen, 1977, cited in Nipithphon Sanitluea, Watchareephorn Sartphet, and Yada Napa-arak, 2018), resulting in a sample of 180 participants.

6. Research Instruments

The primary research instrument was a questionnaire assessing the effectiveness of educational management in Sarasas Affiliated Area 2 schools, divided into three sections:

Section 1: General demographic information (gender, age, education level, position, work experience) in a checklist format.

Section 2: Factors influencing educational management effectiveness, including student-related, teacher-related, administrator-related, and school environment factors, measured using a 5-point Likert Scale:

5 = Strongly agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly disagree

Section 3: The effectiveness of educational management in four areas: academic administration, budget administration, personnel administration, and general administration, also measured on a 5-point Likert Scale.

7. Development and Validation of Research Instruments

The research instrument development process followed these steps:

1. Reviewing related literature and theoretical frameworks.
2. Creating a questionnaire with two main parts:
   General demographic information

Factors influencing educational management effectiveness (four areas)

3. Submitting the questionnaire to academic advisors for review and revision.
4. Seeking expert validation from three specialists:
   Dr. Pawinarat Boonsawat (Director of Sarasas Affiliated Area 2)
   Ms. Supawinee Laibua (Educational Specialist, Rajamangala University of Technology Thanyaburi)
   Dr. Sitthiporn Sutphrom (Educational Specialist, Pathum Thani Provincial Education Office)
5. Evaluating content validity using the Index of Item-Objective Congruency (IOC), with scores categorized as:
   +1 = The item is relevant
   0 = Uncertain relevance
   -1 = The item is not relevant
6. Selecting questions with an IOC value between 0.60 and 1.00.
7. Refining the questionnaire and conducting a pilot study with non-sample teachers.
8. Analyzing reliability using Cronbach's Alpha Coefficient, resulted in a reliability score of 0.97.
9. Distributing the final questionnaire to the sample for data collection.

8. Data Collection Process

The researcher followed these steps:

1. Coordinated with the Graduate Office, Faculty of Education and Liberal Arts, Suvarnabhumi Institute of Technology, to obtain permission for data collection.
2. Sent the questionnaire along with an official request letter to administrators and teachers at Sarasas Affiliated Area 2 schools.
3. Followed up on unreturned questionnaires.
4. Reviewed and validated the collected data.
5. Prepared the dataset for analysis.

9. Data Analysis

The collected data were analyzed using statistical methods:

1. Verification of completeness of the questionnaires.
2. Scoring and categorization of responses.
3. Computerized data analysis using statistical software:
   - Descriptive statistics: Frequency, Percentage, Mean, and Standard Deviation.
   - Factor Analysis: Interpreting educational management effectiveness factors based on Best & Kahn's (1998) criteria:
     - 4.51 – 5.00 = Highest level
     - 3.51 – 4.50 = High level
     - 2.51 – 3.50 = Moderate level
     - 1.51 – 2.50 = Low level
     - 1.00 – 1.50 = Lowest level
4. Hypothesis Testing:
   - t-test: Comparing mean differences based on organizational factors (school size, student numbers, school type).
   - One-Way ANOVA: Analyzing variations between groups and conducting Least Significant Difference (LSD) pairwise comparisons if significant differences were found.
   - Correlation Analysis (Pearson's Correlation Coefficient): Assessing the relationships between factors (administrators, students, teachers, and school environment) and educational management effectiveness.
   - Stepwise Multiple Regression Analysis: Identifying key influencing factors.

10. Statistical Methods Used

The following statistical methods were applied:

- Instrument Validation:
  - Index of Item-Objective Congruency (IOC)
  - Reliability Test (Cronbach's Alpha Coefficient)
- Data Analysis:
  - Descriptive Statistics: Percentage, Mean, Standard Deviation
- Hypothesis Testing:
  - t-test and One-Way ANOVA
  - Correlation Analysis (Pearson's Correlation Coefficient)
  - Stepwise Multiple Regression Analysis

11. Data Analysis

Results of Data Analysis on Factors Affecting the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools

Table 1: Mean, Standard Deviation, Interpretation, and Ranking of Factors Affecting Educational Management Effectiveness in Sarasas Affiliated Area 2 Schools (n=180)

	Factors Affecting Educational Management Effectiveness	Performance Level		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Learners	4.26	0.45	High	4
2	Teachers	4.29	0.55	High	3
3	Administrators	4.30	0.57	High	2
4	School Environment	4.32	0.31	High	1
Overall (X_{tot})		4.29	0.43	High	

According to Table 1, the overall level of factors affecting the effectiveness of educational management in Sarasas Affiliated Area 2 Schools was high ($\bar{x}$= 4.29, S.D. = 0.43).

When analyzing individual factors, ranked from highest to lowest mean score:

1. School Environment was at a high level ($\bar{x}$= 4.32, S.D. = 0.31).
2. Administrators were at a high level ($\bar{x}$= 4.30, S.D. = 0.57).
3. Teachers were at a high level ($\bar{x}$= 4.29, S.D. = 0.55).
4. Learners were at a high level ($\bar{x}$= 4.26, S.D. = 0.45).

These findings indicate that all four factors significantly influence educational management effectiveness, with school environment being the most influential, followed by administrators, teachers, and learners, respectively.

Results of the Analysis on the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools.

Table 2: Mean, Standard Deviation, Interpretation, and Level of Educational Management Effectiveness in Sarasas Affiliated Area 2 Schools (n=180)

Effectiveness of Educational Management	Performance Level		Interpretation	Rank
	$\bar{x}$	S.D.		

1	Academic Administration	4.39	0.45	High	1
2	Budget Administration	4.19	0.48	High	4
3	Personnel Administration	4.26	0.38	High	3
4	General Administration	4.36	0.41	High	2
Overall (Y_{tot})		4.30	0.40	High	

According to Table 2, the overall effectiveness of educational management in Sarasas Affiliated Area 2 Schools was at a high level ($\bar{x}$= 4.30, S.D. = 0.40).

When analyzing individual aspects, ranked from highest to lowest mean score:

1. Academic Administration was at a high level ($\bar{x}$= 4.39, S.D. = 0.45).
2. General Administration was at a high level ($\bar{x}$= 4.36, S.D. = 0.41).
3. Personnel Administration was at a high level ($\bar{x}$= 4.26, S.D. = 0.38).
4. Budget Administration was at a high level ($\bar{x}$= 4.19, S.D. = 0.48).

These results indicate that academic administration had the highest level of effectiveness, followed by general administration, personnel administration, and budget administration, respectively.

Analysis of Factors Affecting the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools.

Table 3: Correlation Coefficients Between the Four Factors and the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools

Variables	X_1	X_2	X_3	X_4	X_{1tot}	Y_{tot}
X_1	1					
X_2	.764**	1				
X_3	.790**	.884**	1			
X_4	.668**	.783**	.730**	1		
X_{tot}	.885**	.951**	.949**	.846**	1	
Y_{tot}	.846**	.853**	.856**	.735**	.910**	1

(Significance level at 0.01)

According to Table 3, the intercorrelations among the four factors—Learners (X1), Teachers (X2), Administrators (X3), and School Environment (X4)—ranged from 0.668 to 0.884, showing a statistically significant positive correlation at the 0.01 level. The strongest correlation was found between Teachers (X2) and Administrators (X3), while the weakest correlation was between Learners (X1) and School Environment (X4).

When considering the correlation coefficients between the four factors and educational management effectiveness (Ytot), the coefficients ranged from 0.735 to 0.910, all of which were statistically significant at the 0.01 level. Among these factors, Administrators (X3) had the highest correlation with educational management effectiveness, while School Environment (X4) had the lowest correlation with educational management effectiveness.

These findings suggest that administrative leadership plays the most critical role in enhancing the effectiveness of educational management, whereas school environment has the least direct impact compared to the other factors.

Results of the Analysis on Development Guidelines for Enhancing the Effectiveness of Educational Management in Sarasas Affiliated Area 2 Schools Based on the synthesis of interviews with three experts, the researcher employed content analysis techniques to organize and interpret the data. The findings were systematically processed and summarized as follows.

1. Learner-Centered Factors
   - Focus on student-centered learning processes.
   - Equip students with essential 21st-century skills.
   - Implement appropriate student assessments.
   - Continuously monitor and follow up on student learning outcomes.

2. Teacher-Related Factors
   - Encourage continuous professional development in teaching knowledge and skills.
   - Clearly define teachers' roles and responsibilities.
   - Provide support and motivation for teachers.
   - Foster teachers' understanding of student psychology and learning needs.
   - Establish a high-quality system for monitoring and evaluating teaching performance.

3. Administrator Factors
   - Promote visionary leadership among administrators.
   - Administrators serve as positive role models.
   - Continuously develop staff competencies.
   - Efficiently plan and manage resources.
   - Support ongoing personnel development.

4. School Environment Factors
   - Develop a conducive learning environment within the school.
   - Efficiently manage and allocate resources.
   - Support learning opportunities beyond the classroom.
   - Create a positive atmosphere that enhances mental health and learning.

These development guidelines aim to improve the effectiveness of educational management by addressing key factors related to learners, teachers, administrators, and the school environment, ensuring holistic and sustainable progress in Sarasas Affiliated Area 2 Schools.

12. Discussion of Research Findings

The findings from the opinions of administrators and teachers in Sarasas Affiliated Area 2 schools highlight key aspects that contribute to the effectiveness of educational management. The discussion is summarized as follows:

Learner-Related Factors Learner-related factors significantly impact the effectiveness of educational management at the 0.01 significance level, aligning with the study by Notkorn Panpumphon (2018). The study emphasized that student quality is the most crucial factor in school development. Since students are the primary focus of education, those with strong learning skills and positive behaviors tend to excel academically and in life skills. This contributes to closing educational gaps and fostering excellence in learning. Moreover, teacher development is also essential, as skilled educators provide effective support for students. A well-managed school environment with strong administrative support ensures a conducive learning atmosphere, facilitating access to necessary resources and improving the overall quality of education. These findings highlight that students are the most

critical factor in achieving educational success, with additional support from teachers, administrators, and school infrastructure playing vital roles.

Teacher-Related Factors Teacher-related factors also significantly impact educational effectiveness at the 0.01 significance level, supporting the findings of Supatra Khantong (2019). The study revealed that teachers' skills and knowledge play a major role in enhancing the quality of education. Teachers with expertise in their subjects and effective teaching strategies can improve student comprehension, critical thinking, and problem-solving skills. Additionally, the use of technology in teaching enhances engagement and provides diverse learning experiences. The results indicate that teachers are a key determinant of student success. When educators possess strong instructional skills, positive attitudes, and an ability to create an engaging learning environment, they significantly contribute to the overall effectiveness of educational management.

Administrator-Related Factors Administrator-related factors significantly affect the effectiveness of educational management at the 0.01 significance level, aligning with the study by Phanaporn Rattanaprasob (2017). The study found that effective school leadership strongly influences institutional success. Administrators who demonstrate strong leadership, strategic planning, and resource management enhance school efficiency. Effective leadership involves clear operational planning, efficient resource allocation, collaboration among staff, and continuous monitoring of school performance. Additionally, visionary leadership is crucial for long-term educational development, inspiring teachers and students while identifying growth opportunities. Schools with competent administrators can foster a supportive learning environment, encourage professional growth, and continuously improve education quality, driving educational success.

School Environment Factors School environment factors also significantly impact educational effectiveness at the 0.01 significance level, supporting the findings of Orauma Maiyavong (2021). The study found that school environment plays a critical role in enhancing education in small schools. Key environmental factors include: Availability of resources, such as classrooms, teaching materials, and learning facilities. A positive social atmosphere, fostering collaboration among teachers, students, and parents. Safety and cleanliness, ensuring a conducive learning space.

Creating a well-structured learning environment both inside and outside the classroom enhances student engagement and learning outcomes. Providing sufficient technological and educational tools, maintaining a safe school environment, and fostering community involvement contribute to improving the overall effectiveness of educational management.

Conclusion The study confirms that learners, teachers, administrators, and the school environment all significantly contribute to educational effectiveness. Among these, administrative leadership and student development play the most crucial roles. Schools aiming to enhance educational effectiveness should focus on:

- Empowering students with essential skills while ensuring a supportive learning environment.
- Investing in teacher training and motivation to enhance instructional quality.
- Developing strong leadership among school administrators.
- Optimizing school infrastructure and resources to support student learning.

By addressing these key areas, schools can achieve sustainable improvements in educational management and student success.

13. Recommendations

Recommendations Based on Research Findings

1. Learner-Related Factors

The research findings indicate that learner-related factors significantly impact the effectiveness of educational management. Therefore, it is recommended to:

- Promote learning activities that align with individual differences, such as ability-based grouping or personalized instruction, to fully develop students' skills and potential.
- Encourage schools to organize activities that enhance practical skills and career readiness, such as real-world training and life skills development programs.
- Establish a guidance and counseling system to provide academic and career advice tailored to students' interests and abilities.

2. Teacher-Related Factors

The findings suggest that teachers play a critical role in educational effectiveness. To enhance their impact, the following actions are recommended:

- Conduct continuous training and professional development programs to equip teachers with modern teaching strategies aligned with 21st-century learning.
- Implement monitoring and evaluation systems to assess teaching effectiveness and provide constructive feedback for improvement.
- Foster collaborative learning among teachers, such as experience-sharing sessions or participation in Professional Learning Communities (PLC) to enhance professional growth.

3. Administrator-Related Factors

The study shows that school administrators significantly influence educational management effectiveness. To optimize their role, it is recommended to:

- Define clear school goals and vision that align with educational policies and community needs.
- Develop leadership and management skills among administrators, ensuring transparency, fairness, and efficiency in school operations.
- Strengthen collaboration between schools, communities, and external organizations to increase resources and opportunities for improving teaching and learning.

4. School Environment Factors

Since the school environment directly impacts educational effectiveness, the following recommendations are made:

- Ensure a safe and conducive learning environment, both physically (e.g., classrooms, libraries, and facilities) and atmospherically (e.g., cleanliness, tranquility, and a supportive atmosphere).
- Integrate modern technology into teaching and learning, including online learning platforms and digital educational tools.
- Foster community partnerships to support integrated learning and organize extracurricular activities such as industry visits and community engagement programs to enhance experiential learning.

Recommendations for Future Research

1. Investigating Learning Factors in the Digital Age
    - Given the increasing reliance on technology and online platforms in education, future studies should explore factors influencing the effectiveness of digital learning.
    - Key areas of interest include the use of digital devices in classrooms, the availability of quality online learning resources, and the role of technology in enhancing critical thinking and problem-solving skills.
2. Exploring the Relationship Between School Management and Student Learning Outcomes
    - Future research should examine the correlation between school administration strategies and student academic performance.
    - This includes analyzing how school leadership practices—such as vision-setting and organizational development—impact teaching effectiveness and student learning outcomes.

- The findings can provide insights into developing school leaders who can drive educational improvement effectively.

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21st-Century Administrative Skills of School Administrators Based on Teachers' Perceptions in the Samut Prakan Primary Education Service Area 2

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Abstract
The objectives of this study were: 1) to examine the level of 21st-century leadership skills of school administrators based on teachers' perceptions in the Samut Prakan Primary Education Service Area 2, and 2) to compare the 21st-century leadership skills of school administrators based on teachers' perceptions, classified by educational qualifications, work experience, and school size. The sample used in this research consisted of 289 teachers from the Samut Prakan Primary Education Service Area 2, selected through stratified and simple random sampling methods. The research instrument used was a 5-point Likert scale questionnaire with a reliability coefficient of 0.98. The data were analyzed using descriptive statistics, including mean, standard deviation, t-test, and one-way ANOVA. The results of the study revealed that: 1. The level of 21st-century leadership skills of school administrators, based on teachers' perceptions, was high both in general and in specific aspects. 2. When comparing the 21st-century leadership skills based on teachers' perceptions, classified by educational qualifications, work experience, and school size, there were no statistically significant differences at the .05 level.

Keywords: 21st-Century Leadership Skills, Teachers' Perceptions, Comparison

1. Introduction

The transition from the industrial society of the 19th and 20th centuries to the knowledge-based society of the 21st century has brought rapid changes, primarily driven by digital technology that connects global information networks. The acceleration of digital advancements has led to significant transformations, with experts agreeing that this shift is only just beginning and will intensify exponentially in the future. This rapid evolution inevitably impacts the education sector, requiring schools to adapt and prepare students with the necessary skills to navigate the 21st-century world. As educational systems undergo transformation, key questions arise: Are schools and educators prepared to cope with these changes? Are those in leadership positions equipped with the knowledge and skills to integrate technology into teaching and learning? Do school administrators understand these shifts and are they ready to manage them effectively? According to Churches (2008), the transformation of classrooms, teachers, curricula, and learning approaches must also be accompanied by a shift in pedagogy to reflect the ways

students learn and the world they will encounter in the future. Thus, instructional methods must focus on knowledge creation and knowledge deepening, where students engage in learning by doing through real-world applications. This approach fosters higher-order thinking skills, progressing from basic memory and comprehension to analysis, evaluation, and creativity, as outlined in Bloom's Taxonomy (Sommai, 2013). A critical issue in Thailand is the disconnect between education and real-life goals. Many students lack direction, which contributes to societal problems such as juvenile delinquency, substance abuse, and teenage pregnancy. The traditional rote-learning approach has failed to develop students' identities and life objectives, leaving them unprepared for adulthood. Thai education must shift from creating passive learners to fostering independent thinkers and problem solvers. The emphasis should be on quality education for all rather than for a select few. The education system of the 21st century must move away from outdated teaching models and focus on building a future-ready workforce capable of critical thinking, innovation, and adaptability (Wicharn, 2017).

In terms of educational leadership, Katz (1955) identified three essential skills for administrators: technical skills, human skills, and conceptual skills. Drake and Roe (1986) later expanded this framework to include educational and instructional communication skills and administrative skills. Similarly, Rocky (2013, cited in Wirote, 2010) emphasized the importance of team-building skills, arguing that school leaders must foster collaboration to effectively manage educational institutions. Yang (2016) studied 21st-century leadership skills in North America and found that technology proficiency is crucial for modern school administrators. Effective leaders must utilize technology to enhance teaching, support educators, and manage educational institutions efficiently. If school administrators lack these essential skills, they are unlikely to succeed. Dindred (1975, cited in Kanjanapa, 2008) found that the effectiveness of school administration depends on the leader's knowledge, skills, and experience in managing educational programs. Critical leadership competencies include technological proficiency, conflict management, interpersonal skills, leadership, public speaking, and organizational management. These skills enable administrators to foster an environment that promotes student success and institutional efficiency. Recognizing the importance of these competencies, this study focuses on 21st-century administrative skills among school leaders in Samut Prakan Primary Education Service Area 2, based on teachers' perceptions. As a teacher within this educational jurisdiction, the researcher aims to explore the development of administrative competencies necessary for modern educational leadership. The findings will provide insights into effective school management practices that align with the evolving educational landscape, ensuring enhanced learning outcomes and institutional effectiveness.

2. Research Objectives

1.2 .1 To examine the level of 21st-century administrative skills of school administrators based on teachers' perceptions in the Samut Prakan Primary Education Service Area 2.

1.2.2 To compare the 21st-century administrative skills of school administrators based on teachers' perceptions in the Samut Prakan Primary Education Service Area 2, classified by educational qualifications, work experience, and school size.

3. Research Hypotheses

1.3.1 The level of 21st-century administrative skills of school administrators, as perceived by teachers in the Samut Prakan Primary Education Service Area 2, is at a moderate level.

1.3.2 There are significant differences in the 21st-century administrative skills of school administrators, as perceived by teachers in the Samut Prakan Primary Education Service Area 2, when classified by educational qualifications, work experience, and school size.

4. Literature Review

4.1. Definition of Administration

Teerasak Upramai et al. (2020: 26) stated that administration refers to principles that serve as guidelines for operational processes, involving systematic steps and planning aimed at achieving specific goals. Individuals involved in education management must study and understand these principles to implement them effectively within their organizations.

Sirinya Siriprakon (2018: 8) defined administration as a process encompassing goals, personnel, and various resources. It is a branch of social sciences that integrates principles and theories from anthropology, sociology, psychology, and behavioral sciences. However, administration does not solely rely on scientific principles but also requires an artistic approach, meaning administrators must adapt management theories and knowledge to real-life situations. The core functions of administration include planning, organizing, directing, delegating, reporting, and budgeting. Additionally, key components of administration involve clear objectives, resource management, coordination, and ensuring efficiency and effectiveness in operations.

Wirot Sararatna (2010: 1) described administration as a process aimed at achieving organizational goals efficiently, relying on core functions such as planning, organizing, leading, and controlling.

Samma Rathanith (2010: 37) defined administration as a process where two or more individuals work together using planning, organizing, directing, controlling, and execution to achieve organizational objectives efficiently while maximizing the benefits of available resources and technology.

Hoy and Miskel (2008: 437) explained that administration is a process directed toward achieving predetermined goals through various components such as decision-making, organizational structure, motivation, and leadership, while also considering future implications and possible impacts.

4.2. Summary

Administration is a systematic operational process aimed at achieving organizational goals through planning, organizing, directing, and controlling. Effective administration requires not only scientific management of resources, personnel, and technology but also an artistic approach to apply theories and knowledge appropriately to real-world situations. This ensures the highest efficiency and effectiveness in collaborative operations.

4.3. Definition of Educational Administration

Kwanpicha Meekaew (2019: 11) defined educational administration as a systematic operational process led by school administrators to manage four key areas:

1. Academic administration
2. Budget administration
3. Personnel administration
4. General administration

Sunan Rungarunsangthong (2018: 11) described educational administration as the structured process of managing school activities. This involves planned methods and procedures to efficiently achieve educational goals. The purpose is to develop students with competence, skills, and moral values to live happily in society. Administrators, teachers, and stakeholders must collaborate to utilize limited resources effectively while ensuring compliance with educational standards.

Anuchit Sukkasi (2017: 11) explained that educational administration involves organizing various activities systematically to improve school operations, enhance personnel capabilities, and achieve educational objectives efficiently.

Noppong Boonjittradhulya (2014: 4) defined educational administration as cooperative efforts where multiple individuals work together to develop students in all aspects, including personality, knowledge, abilities, behavior, and ethics, to align with societal needs. This process involves controlling the learning environment, utilizing

resources effectively, and applying appropriate techniques to help individuals develop according to societal expectations.

Priyaporn Wongsanutraroj (2010: 8) stated that educational administration is a primary responsibility of school administrators, requiring them to establish structured methods and procedures for operations. Poor administration can negatively impact an organization, whereas effective leadership ensures goal achievement. Successful school administration integrates both scientific and artistic approaches, recognizing that administrators cannot work alone but must coordinate with diverse team members with different intelligence, skills, and needs. Therefore, administrators must employ appropriate management techniques and strategies to optimize efficiency.

Samma Rathanith (2010: 95) defined educational administration as school management processes where administrators collaborate with stakeholders to implement planning, decision-making, control, and management to ensure students achieve quality education, knowledge, and desirable characteristics, as intended by the education system.

4.4. Summary

Educational administration refers to the systematic management of schools, led by administrators and stakeholders, to develop and optimize four key areas:

1. Academic administration
2. Budget administration
3. Personnel administration
4. General administration

It aims to achieve educational objectives effectively by integrating scientific principles (e.g., planning, organizing, and resource management) with artistic approaches (e.g., adaptive leadership and strategic application of theories). A well-managed education system ensures student success and aligns with societal expectations.

5. Population and Sample

5.1. Population

The population for this study consisted of 1,166 teachers under the jurisdiction of the Samut Prakan Primary Education Service Area 2.

5.2. Sample

The sample size was determined using the G*Power version 3.1.9.2 program, applying the Correlation Bivariate Normal Model with the following parameters:

- Power Analysis = 0.99
- Level of significance = 0.01
- Effect size = 0.3 (Cohen, 1977, as cited in Nipithphon Sanitluea, Watchareeporn Sartpetch, and Yada Naphaarak, 2018).

The calculated sample size was 289 teachers, selected through stratified and simple random sampling methods.

6. Research Instrument

The research instrument was a questionnaire designed to assess 21st-century leadership skills of school administrators as perceived by teachers in Samut Prakan Primary Education Service Area 2. The questionnaire was developed based on a review of literature and theories on school leadership in the 21st century from various scholars, including Wattanakorn Torsorn (2018), Damnoen Piankha (2018), Kraison Jiamthong (2018), Boonsong

Krungcharee (2019), Nattapong Preechanontakul (2020), Porntip Mongkolsethien (2020), Sattabut Podhirut (2021), Atikarn Srisang (2021), Nipaporn Rodphaiboon (2022), Mwinzi (2016), and Maxine Driscoll (2019).

The synthesized leadership skills were categorized into four key competencies:

1. Communication skills
2. Technology and digital literacy skills
3. Analytical and creative thinking skills
4. Ethical, moral, and professional integrity skills

Structure of the Questionnaire

- Section 1: Respondent demographics (education level, work experience, and school size) in a checklist format.
- Section 2: A Likert-scale questionnaire (5-point scale) assessing the 21st-century leadership skills of school administrators across four competency areas.

Likert Scale Interpretation:

- 5 = Very high level of 21st-century leadership skills
- 4 = High level
- 3 = Moderate level
- 2 = Low level
- 1 = Very low level

7. Development and Validation of Research Instrument

The questionnaire development followed these steps:

1. Reviewing literature and theoretical frameworks related to 21st-century school leadership skills.
2. Constructing the questionnaire based on the four key competencies.
    - Section 1: Demographic data (checklist format).
    - Section 2: 21st-century leadership skills (Likert-scale format).
3. Consulting with an academic advisor for initial validation.
4. Seeking expert validation from three professionals in educational administration under Samut Prakan Primary Education Service Area 2, including:
    - 1 school director (Master's degree or higher, at least 5 years of experience).
    - 1 deputy school director (Master's degree, at least 5 years of experience).
    - 1 educational supervisor (Doctorate degree, at least 5 years of experience in educational supervision and evaluation).
5. Content validity analysis using the Index of Item-Objective Congruence (IOC) formula:
    +1 = The question aligns with the intended definition.
    0 = Uncertain.
    -1 = The question does not align with the definition.
    Questions with IOC values between 0.60 - 1.00 were selected for the final questionnaire.
6. Piloting the questionnaire (Try-Out) with non-sample teachers.
7. Reliability testing using Cronbach's Alpha (1990: 202-204) to ensure internal consistency.
8. Finalizing the questionnaire for data collection.

8. Data Collection

The data collection process involved the following steps:

1. Requesting approval from the Graduate School, Faculty of Education and Liberal Arts, Suvarnabhumi Institute of Technology, to conduct the study.
2. Submitting a formal request to school administrators in Samut Prakan Primary Education Service Area 2 for research participation.

3. Distributing the questionnaire to the sample group using Google Forms.
4. Verifying completeness and accuracy of the returned questionnaires.
5. Analyzing the collected data.

9. Data Analysis

The data were analyzed using statistical methods as follows:

1. Preliminary Analysis Checking completeness and accuracy of the returned questionnaires. Scoring responses according to predetermined criteria.
2. Descriptive Statistics Demographic data (education level, work experience, and school size) were analyzed using frequency and percentage. Leadership skills assessment was analyzed using mean ($\bar{X}$) and standard deviation (S.D.).
3. Inferential Statistics Comparing leadership skills across different demographic groups (education level, work experience, and school size) using One-Way ANOVA. If significant differences were found, Scheffé's method was applied for post-hoc pairwise comparisons.

10. Statistical Methods Used in Data Analysis

1. Instrument Validation Statistics Index of Item-Objective Congruence (IOC) to assess content validity. Cronbach's Alpha to test questionnaire reliability.
2. Descriptive Statistics Percentage (%) Mean ($\bar{X}$) Standard Deviation (S.D.)
3. Hypothesis Testing
   - Analysis of leadership skill levels using mean ($\bar{X}$) and standard deviation (S.D.).
   - Comparisons of leadership skills based on education level, work experience, and school size using One-Way ANOVA.
   - If significant differences were found, Scheffé's method was applied for pairwise comparisons.

11. Data Analysis

Analysis of 21st-Century Leadership Skills of School Administrators as Perceived by Teachers in Samut Prakan Primary Education Service Area 2

Table 1: Mean, Standard Deviation, Interpretation, and Ranking of 21st-Century Leadership Skills of School Administrators as Perceived by Teachers (n=289)

	21st-Century Leadership Skills of School Administrators	Performance Level		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Communication Skills	4.04	0.33	High	1
2	Technology and Digital Literacy Skills	4.02	0.34	High	3
3	Analytical and Creative Thinking Skills	4.01	0.32	High	4
4	Ethical, Moral, and Professional Integrity Skills	4.03	0.35	High	2
	Overall (X_{tot})	4.02	0.29	High	

According to Table 1 , the overall level of 21st-century leadership skills of school administrators, as perceived by teachers in Samut Prakan Primary Education Service Area 2, was at a high level ($\bar{X}$ = 4.02, S.D. = 0.29). When examining each skill category, the rankings from highest to lowest mean scores are as follows: Communication skills ($\bar{X}$ = 4.04, S.D. = 0.33) – Highest Ethical, moral, and professional integrity skills ($\bar{X}$ = 4.03, S.D. = 0.35) Technology and digital literacy skills ($\bar{X}$ = 4.02, S.D. = 0.34) Analytical and creative thinking skills ($\bar{X}$ = 4.01,

S.D. = 0.32) – Lowest Overall, all four leadership skills were perceived at a high level, with communication skills ranking the highest and analytical and creative thinking skills ranking the lowest.

Comparison of 21st-Century Leadership Skills of School Administrators as Perceived by Teachers in Samut Prakan Primary Education Service Area 2, Categorized by Educational Qualifications.

Table 2: Analysis of Variance (ANOVA) for 21st-Century Leadership Skills of School Administrators by Educational Qualifications

21st-Century Leadership Skills of School Administrators	Source of Variation	df	ss	ms	f	p
1 Communication Skills	Between Groups	2	0.03	0.01	0.15	0.85
	Within Groups	286	31.12	0.11		
	Total	288	31.72			
2 Technology and Digital Literacy Skills	Between Groups	2	0.05	0.01	0.02	0.98
	Within Groups	286	34.79	0.12		
	Total	288	34.80			
3 Analytical and Creative Thinking Skills	Between Groups	2	0.03	0.01	0.16	0.84
	Within Groups	286	30.51	0.10		
	Total	288	30.54			
4 Ethical, Moral, and Professional Integrity Skills	Between Groups	2	0.06	0.03	0.25	0.77
	Within Groups	286	35.79	0.12		
	Total	288	35.85			
Overall	Between Groups	2	0.02	0.01	0.16	0.85
	Within Groups	286	25.80	0.09		
	Total	288	25.83			

$p < .05$

According to Table 2, the comparison of 21st-century leadership skills of school administrators as perceived by teachers in Samut Prakan Primary Education Service Area 2, categorized by educational qualifications, showed no statistically significant differences at the .05 level, both in overall and individual aspects.

Comparison of 21st-Century Leadership Skills of School Administrators as Perceived by Teachers in Samut Prakan Primary Education Service Area 2, Categorized by Work Experience.

Table 3: Analysis of Variance (ANOVA) for 21st-Century Leadership Skills of School Administrators by Work Experience

21st-Century Leadership Skills of School Administrators	Source of Variation	df	ss	ms	f	p
1 Communication Skills	Between Groups	2	0.15	0.07	0.67	0.50
	Within Groups	286	31.57	0.11		
	Total	288	31.71			
2 Technology and Digital Literacy Skills	Between Groups	2	0.09	0.04	0.36	0.69
	Within Groups	286	34.71	0.12		
	Total	288	34.80			
3 Analytical and Creative Thinking Skills	Between Groups	2	0.21	0.10	1.01	0.36
	Within Groups	286	30.33	0.10		
	Total	288	30.54			
4 Ethical, Moral, and Professional Integrity Skills	Between Groups	2	0.62	0.31	2.52	0.08
	Within Groups	286	35.23	0.12		

	Total	288	35.85			
Overall	Between Groups	2	0.16	0.08	0.91	0.40
	Within Groups	286	25.67	0.09		
	Total	288	25.83			

$p < .05$

According to Table 3 , the comparison of 21st-century leadership skills of school administrators as perceived by teachers in Samut Prakan Primary Education Service Area 2, categorized by work experience, showed no statistically significant differences at the .05 level, both in overall and individual aspects.

Comparison of 21st-Century Leadership Skills of School Administrators as Perceived by Teachers in Samut Prakan Primary Education Service Area 2, Categorized by School Size.

Table 4: Analysis of Variance (ANOVA) for 21st-Century Leadership Skills of School Administrators by School Size

21st-Century Leadership Skills of School Administrators	Source of Variation	df	ss	ms	f	p
1 Communication Skills	Between Groups	3	0.65	0.21	1.98	0.11
	Within Groups	285	31.07	0.10		
	Total	288	31.72			
2 Technology and Digital Literacy Skills	Between Groups	3	1.10	0.36	3.10	0.27
	Within Groups	285	33.69	0.11		
	Total	288	34.80			
3 Analytical and Creative Thinking Skills	Between Groups	3	0.55	0.18	1.76	0.15
	Within Groups	285	29.99	0.10		
	Total	288	30.54			
4 Ethical, Moral, and Professional Integrity Skills	Between Groups	3	0.17	0.58	0.46	0.71
	Within Groups	285	35.68	0.12		
	Total	288	35.85			
Overall	Between Groups	3	0.52	0.17	1.96	0.11
	Within Groups	285	25.31	0.08		
	Total	288	25.83			

$p < .05$

According to Table 4 the comparison of 21st-century leadership skills of school administrators as perceived by teachers in Samut Prakan Primary Education Service Area 2, categorized by school size, showed no statistically significant differences at the .05 level, both in overall and individual aspects.

12. Discussion of Research Findings

The study on teachers' perceptions of 21st-century leadership skills of school administrators in Samut Prakan Primary Education Service Area 2 revealed several significant findings:

Communication Skills The study found that communication skills among school administrators were at a high level. This could be attributed to their need to adapt to challenges in the 21st century and the organizational culture that fosters open communication. Training and the integration of technology in school management may also play a role in improving administrators' communication effectiveness. This finding aligns with Durnali et al. (2020),

who found that effective negotiation, persuasion, and conflict resolution skills help reduce internal school conflicts and foster a more open work culture among teachers.

Technology and Digital Literacy Skills The high level of technology and digital literacy skills among school administrators may stem from the increasing role of technology in enhancing learning quality and school management. Administrators must develop their digital skills to effectively support teachers and students in technology-based learning. This is consistent with Jones & Dexter (2018), who found that school administrators with strong technological skills can effectively utilize technology for secure data management, communication, and decision-making. Furthermore, Richardson & Sterrett (2018) emphasized the importance of professional development in technology, as administrators who undergo continuous training tend to exhibit higher technological proficiency.

Analytical and Creative Thinking Skills The study found that analytical and creative thinking skills among school administrators were at a high level. Administrators who are capable of introducing and implementing new ideas contribute to continuous school development and enhanced teaching and management strategies. This aligns with Kuratko & Audretsch (2019), who highlighted that innovation in educational leadership leads to organizational improvements and better student learning outcomes. Their study emphasized that leaders with strong analytical and creative thinking skills are better equipped to introduce sustainable innovations in education.

Ethical, Moral, and Professional Integrity Skills The high level of moral and ethical leadership skills among administrators suggests that they demonstrate high ethical standards, which help build trust among teachers and staff. Trust in leadership contributes to a positive working environment and encourages open communication and collaboration. This aligns with Sari & Setyowati (2021), who found that ethical leadership fosters trust and respect within the organization, leading to transparency and effectiveness in school management.

Comparison of Leadership Skills by Education Level, Work Experience, and School Size The study found no statistically significant differences in 21st-century leadership skills based on administrators' educational qualifications, work experience, or school size. This contradicts the initial hypothesis, suggesting that administrators in this education district develop their leadership skills similarly, regardless of external factors such as education level and years of experience. The findings indicate that 21st-century school leadership emphasizes lifelong learning, adaptability to technology, and efficient communication, which may not necessarily be influenced by traditional factors like experience or education level. The standardized training and professional development programs offered to school administrators could explain the uniformity in skills across different school sizes. This finding is consistent with Montathip Namnu (2018), who found no statistically significant differences in the 21st-century leadership skills of school administrators based on gender, education level, or work experience.

13. Recommendations

Recommendations from the Study

1. Communication Skills: School administrators should have the ability to effectively convey knowledge and information in alignment with the objectives of their work.
2. Technology and Digital Literacy Skills: Administrators should be proficient in utilizing technology to manage school operations efficiently and effectively.
3. Analytical and Creative Thinking Skills: Administrators should develop processes for out-of-the-box thinking to drive innovation and improvements in school management.
4. Ethical, Moral, and Professional Integrity Skills: Administrators should apply good governance principles in their management practices to ensure ethical and transparent leadership.

Recommendations for Future Research

1. Future studies should examine the impact of 21st-century leadership skills of school administrators on the quality of student education, to provide insights for improving school management practices.

2. Research should also explore the relationship between 21st-century leadership skills of school administrators and their role in promoting professional development, academic excellence, and establishing educational standards.

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General Administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2

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Abstract
This study aimed to 1) examine the general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, and 2) compare the general administration of this school group based on differences in job positions, school sizes, and years of work experience. The sample consisted of 140 administrators and teachers selected using stratified random sampling and simple random sampling. The research instrument was a five-point Likert scale questionnaire with a reliability coefficient of 0.95. Data analysis included Mean, Standard Deviation, t-test, and One-Way ANOVA. Research Findings: 1) The overall and specific aspects of general administration in the Bang Bo 1 School Group were at the highest level; 2) The comparison of general administration based on job positions, school sizes, and years of work experience revealed that job positions showed statistically significant differences at the 0.05 level, while school size and work experience did not show significant differences.

Keywords: General Administration, Educational Management, Comparison

1. Introduction

The National Education Act B.E. 2542 (1999) and its amendments mandate the Ministry of Education to decentralize educational administration in areas such as academic affairs, budgeting, personnel management, and general administration. This decentralization empowers educational service areas and schools to enhance education quality, student competency, and personnel development while ensuring that student learning outcomes meet societal expectations (Office of Basic Education Commission, 2013).

The Ministerial Regulations on Educational Administration B.E. 2550 (2007) define key aspects of general administration, including information system development, educational planning, resource mobilization, public relations, student activities, and collaboration with organizations and communities. These areas support efficient school operations and student development (Ministry of Education, 2007).

General administration is essential for managing school operations, resources, and administrative efficiency to align with national education policies. It includes organizational management, policy research, school governance,

and monitoring systems that contribute to an effective educational management framework (Office of Education Reform, 2002).

Given its importance, the researcher, as the head of general administration, conducted this study to examine the general administration practices of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2. The study aimed to assess administration levels and develop strategies to improve efficiency. The findings will serve as a foundation for future administrative improvements in schools within the region.

2. Research Objectives

1.2.1 To study the general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2.

1.2.2 To compare the general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2 based on job position, school size, and years of work experience.

3. Research Hypotheses

1.3.1 The general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2 is at a moderate level.

1.3.2 The general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2 differs significantly based on job position, school size, and years of work experience.

4. Literature Review

4.1. General Administration: Definitions and Perspectives

Yutthana Lamloet (2022) stated that general administration refers to the implementation of operations that focus on supporting, facilitating, and providing services to internal school units. It ensures the provision of all forms of education while engaging individuals, communities, and organizations in coordinating and streamlining teaching, learning, and administrative tasks, leading to efficient and effective goal attainment.

Budsaba Kena-on (2022) described general administration as the successful implementation of various educational support functions, including: Developing information systems and educational networks Coordinating and planning educational administration Conducting research for policy and strategic development Managing school facilities and environments Handling student census and enrollment Proposing school establishment, mergers, or closures Mobilizing educational resources Organizing student activities and field trips Promoting educational public relations Collaborating with communities and organizations in education Monitoring and evaluating internal control systems Implementing behavioral modification programs for students.

Sittisak Petchyim (2020) defined general administration as the management of school operations that support and enhance educational processes to meet quality standards and institutional goals. It also involves facilitating the functions of different school departments, ensuring their successful implementation.

Pramoon Suwannamajo (2019) emphasized that general administration refers to the management of various school operations in alignment with the Ministry of Education's decentralization policies. It focuses on coordination, facilitation, and support to ensure that all school functions achieve their intended objectives.

Atchara Chongdee (2017) described general administration as the process of providing services to different school units, ensuring that they operate efficiently and achieve their objectives. She likened general administration to the backbone of school operations, supporting teaching and learning effectiveness.

Brown (1993) stated that general administration involves the management of various school departments, ensuring they function smoothly to achieve their objectives. It plays a coordinating and supportive role in helping schools accomplish their goals.

Joyce (1992) defined general administration as organizational management that facilitates coordination and support for various school functions. It plays a key role in enhancing administrative efficiency.

Candoli et al. (1991) explained that general administration is the preparation and support of educational management to enhance teaching and learning efficiency and effectiveness.

In conclusion, general administration refers to managing school operations to support and enhance educational quality and standards. It ensures that all school functions align with institutional objectives while facilitating collaboration with external organizations to achieve successful educational outcomes.

5. Population and Sample

5.1. Population

The population for this study includes 220 teachers and school administrators from the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2.

5.2. Sample

The sample size was determined using G*Power version 3.1.9.2, with the statistical test set as Correlation Bivariate Normal Model. The parameters included a Power Analysis of 0.99, a significance level of 0.01, and a medium effect size of 0.3, following Cohen (1977) (as cited in Nipitphon Sanitluea, Watchareephon Sartphet, and Yada Napha-arak, 2018). Based on these parameters, a total of 140 participants were selected through stratified random sampling and simple random sampling.

6. Research Instrument

The instrument used for data collection was a questionnaire developed and refined based on academic literature and previous research related to general administration. The questionnaire consisted of:

Questionnaire Structure:
Part 1: Demographic Information – A checklist covering respondents' position, school size, and years of experience.
Part 2: General Administration – A Likert Scale questionnaire (5 levels) evaluating general administration in five key areas:

Administration and Clerical Work
Information and Communication Technology (ICT) Infrastructure
Resources and Facilities Management
Student Affairs
Educational Coordination and Public Relations

The Likert Scale ratings were:

5 = Highest level
4 = High level
3 = Moderate level
2 = Low level
1 = Lowest level

7. Instrument Development and Quality Validation

1.Development Process

1. Review of literature, theories, and research related to general administration in the Bang Bo 1 School Group.
2. Creation of a structured questionnaire with two main parts:
    - Demographic Information (Position, school size, years of experience).
    - General Administration Assessment (Five key aspects).
3. Expert validation by an advisory committee, incorporating suggestions for improvement.

2. Expert Validation Criteria

Three education experts were selected through purposive sampling, including:

1. An educational administrator (Ph.D. in education or equivalent) with at least five years of experience in educational management.
2. Two school administrators (Master's degree or higher in education) with at least five years of experience in school management.

These experts assessed the questionnaire's content validity using the Index of Item-Objective Congruence (IOC) with the following rating scale:

- +1 = The item is relevant to the research objective.
- 0 = Uncertain if the item is relevant.
- -1 = The item is not relevant.

Items with IOC values between 0.60 - 1.00 were included in the final questionnaire.

3. Pilot Testing and Reliability Analysis

1. Refinement of the questionnaire based on expert feedback.
2. Pilot testing (Try-out) with a group of teachers not included in the sample.
3. Reliability testing using Cronbach's Alpha (1990: 202-204) to assess the internal consistency of the questionnaire.
4. Finalized questionnaire used for data collection.

8. Data Collection Process

1. Approval and coordination with the Graduate Studies Office, Faculty of Education and Liberal Arts, Suvarnabhumi Institute of Technology, to obtain permission for data collection.
2. Distribution of the questionnaire to administrators and teachers in the Bang Bo 1 School Group.
3. Follow-up and retrieval of incomplete questionnaires.
4. Data verification and validation before analysis.

9. Data Analysis

1. Data Processing Steps

1. Verification of returned questionnaires for completeness.
2. Scoring and categorization of responses based on predefined criteria.
3. Statistical analysis using SPSS to generate results.

2. Statistical Methods Used

2.1 Descriptive Statistics

- Percentage (%) – To summarize demographic data.
- Mean ($\bar{X}$) – To measure the overall level of general administration.
- Standard Deviation (S.D.) – To assess data dispersion.

2.2 Hypothesis Testing

- One-way ANOVA – To compare general administration based on position, school size, and years of experience.
- Scheffe's Method – To determine pairwise differences if significant differences were found.

2.3 Instrument Reliability Testing

- Index of Item-Objective Congruence (IOC) – To validate content accuracy.

- Cronbach's Alpha Coefficient – To assess questionnaire reliability.

11. Data Analysis

Results of Data Analysis on General Administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2.

Table 1: Mean, Standard Deviation, Interpretation, and Ranking of General Administration in the Bang Bo 1 School Group

(n=140)

	General Administration	Level of Implementation		Interpretation	Rank
		$\bar{x}$	S.D.		
1	Administration and Clerical Work	4.52	0.25	Highest	3
2	Information and Communication Technology (ICT) Infrastructure	4.51	0.27	Highest	4
3	Resources and Facilities Management	4.50	0.25	Highest	5
4	Student Affairs	4.54	0.23	Highest	2
5	Educational Coordination and Public Relations	4.56	0.28	Highest	1
	Overall (X_{tot})	4.52	0.20	Highest	

Based on Table 1, the overall level of general administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2 was at the highest level ($\bar{X}$ = 4.52, S.D. = 0.20). When considering each aspect individually, the rankings based on the highest mean scores were as follows: Educational Coordination and Public Relations had the highest mean ($\bar{X}$ = 4.56, S.D. = 0.28). Student Affairs followed closely ($\bar{X}$ = 4.54, S.D. = 0.23). Administration and Clerical Work ranked third ($\bar{X}$ = 4.52, S.D. = 0.25). This indicates that educational coordination and public relations were the most efficiently managed, while resources and facilities management had the lowest mean but remained at the highest level of effectiveness.

Analysis of General Administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, Classified by Job Position, School Size, and Years of Work Experience.

Table 2: Comparison of General Administration in the Bang Bo 1 School Group, Classified by Job Position

(n=140)

	General Administration	School Administrators (n=21)		Teachers (n=119)			
		$\bar{x}$	S.D.	$\bar{x}$	S.D.	t	p
1	Administration and Clerical Work	4.66	0.29	4.49	0.23	3.01	0.00
2	Information and Communication Technology (ICT) Infrastructure	4.69	0.29	4.47	0.23	3.82	0.00
3	Resources and Facilities Management	4.64	0.35	4.48	0.22	2.80	0.00
4	Student Affairs	4.79	0.25	4.50	0.24	5.37	0.00
5	Educational Coordination and Public Relations	4.80	0.27	4.52	0.23	5.01	0.00

Overall (X_{tot})	4.72	0.20	4.49	0.19	4.98	0.00

*p < .05

According to Table 2, the overall general administration in the Bang Bo 1 School Group, classified by job position, showed a statistically significant difference at the 0.05 level. School administrators ($\bar{X}$ = 4.72, S.D. = 0.20) reported a higher level of general administration compared to teachers ($\bar{X}$ = 4.49, S.D. = 0.19). All five aspects of general administration showed significant differences ($p < 0.05$), with school administrators rating higher in all areas than teachers. The largest differences were observed in Student Affairs ($t = 5.37$, $p = 0.00$) and Educational Coordination and Public Relations ($t = 5.01$, $p = 0.00$), indicating that school administrators perceived these areas more positively than teachers. These findings suggest that job position influences the perception of general administration efficiency, with administrators rating overall management higher than teachers.

Table 3: Comparison of General Administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, Classified by School Size

General Administration	Source of Variation	df	ss	ms	f	p
Administration and Clerical Work	Between Groups	2	0.02	0.01	0.21	0.80
	Within Groups	137	8.98	0.06		
	Total	139	9.01			
Information and Communication Technology (ICT) Infrastructure	Between Groups	2	0.11	0.05	0.85	0.42
	Within Groups	137	9.09	0.06		
	Total	139	9.21			
Resources and Facilities Management	Between Groups	2	0.31	0.15	2.50	0.08
	Within Groups	137	8.61	0.06		
	Total	139	8.91			
Student Affairs	Between Groups	2	0.00	0.00	0.03	0.96
	Within Groups	137	8.72	0.06		
	Total	139	8.72			
Educational Coordination and Public Relations	Between Groups	2	0.05	0.02	0.40	0.66
	Within Groups	137	9.22	0.06		
	Total	139	9.27			
Overall	Between Groups	2	0.01	0.00	0.12	0.88
	Within Groups	137	6.03	0.04		
	Total	139	6.04			

*p < .05

According to Table 3, the general administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, classified by school size, showed no significant differences in both overall and individual aspects ($p > 0.05$). This indicates that school size does not significantly influence general administration efficiency, implying that schools of different sizes operate under similar administrative conditions and follow standardized management practices.

Table 4: Comparison of General Administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, Classified by Years of Work Experience

General Administration	Source of Variation	df	ss	ms	f	p
Administration and Clerical Work	Between Groups	2	1.20	0.02	0.23	0.60

	Within Groups	137	7.80	0.07		
	Total	139	9.01			
Information and Communication Technology (ICT) Infrastructure	Between Groups	2	0.75	0.0	0.87	0.32
	Within Groups	137	8.45	0.07		
	Total	139	9.21			
Resources and Facilities Management	Between Groups	2	0.49	0.16	2.55	0.06
	Within Groups	137	8.42	0.07		
	Total	139	8.91			
Student Affairs	Between Groups	2	0.55	0.01	0.07	0.36
	Within Groups	137	8.17	0.07		
	Total	139	8.72			
Educational Coordination and Public Relations	Between Groups	2	0.81	0.03	0.50	0.26
	Within Groups	137	8.46	0.07		
	Total	139	9.27			
Overall	Between Groups	2	0.71	0.01	0.14	0.78
	Within Groups	137	5.33	0.05		
	Total	139	6.51			

*p < .05

According to, the general administration in the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2, classified by years of work experience, showed no significant differences in both overall and individual aspects ($p > 0.05$). This indicates that years of work experience do not significantly impact the perception or effectiveness of general administration, suggesting that personnel across different experience levels operate under similar management conditions and follow standardized administrative procedures.

12. Discussion of Research Findings

The findings from school administrators and teachers' opinions on the general administration of the Bang Bo 1 School Group under the Samut Prakan Primary Educational Service Area Office 2 present several key points for discussion, as follows:

Administration and Clerical Work The general administration in the aspect of administration and clerical work was rated at the highest level. This may be attributed to the strong leadership of school administrators, who emphasize listening to and supporting personnel, fostering a positive and efficient working environment. Factors Contributing to High Performance Participatory Decision-Making: Teachers and staff actively participate in setting standards, indicators, and success criteria, leading to shared responsibility and commitment to development. Clear Planning and Continuous Evaluation: Systematic planning and performance evaluation allow for efficient improvements in administration. These findings align with Anudet Bansara (2021), who studied general administration in schools under the Pathum Thani Primary Educational Service Area Office 2. The study emphasized that school administrators must thoroughly understand clerical work, appoint administrative officers, establish operational guidelines based on government regulations, and integrate technology for administrative support, such as an online document submission system.

Information and Communication Technology (ICT) Infrastructure The ICT infrastructure in the general administration of the Bang Bo 1 School Group was rated at the highest level, reflecting Digital Transformation in education. This aligns with the concept of e-Governance in Education, which enhances data management and communication with the school community. Key Contributing Factors School Policy on IT Integration: The investment in IT infrastructure, including high-speed internet and cloud-based systems, facilitates data storage and accessibility. IT Training for Staff: Enhancing teachers' and staff members' IT skills improves administrative efficiency. Community and Parental Involvement: The use of ICT for communication with parents and communities promotes transparency and administrative efficiency. These results align with Prawanrat Pimphrom

(2016), who studied educational administration from the perspective of school administrators and teachers under the Pathum Thani Primary Educational Service Area Office. The study found that ICT in education significantly improves problem-solving and administrative efficiency.

Resources and Facilities Management The resources and facilities management aspect of general administration was rated at the highest level. This may be due to: Key Contributing Factors School Policy on Resource and Facility Development: A clear strategic plan ensures effective resource allocation and facility improvement. Support from Various Sectors: Collaboration with government agencies, private sectors, and local communities provides additional resources. Modern Learning Spaces: The design of innovative and multi-purpose learning environments aligns with changing educational needs. Health and Environmental Standards: Clear hygiene and environmental regulations enhance the overall learning environment. These findings are consistent with Prawanrat Pimphrom (2016), who emphasized that school facility management involves systematic planning, implementation, and evaluation to meet organizational and educational goals. The Ministry of Education (2008) outlined four key steps in facility management: Assessment of current conditions, challenges, and needs. Strategic planning and project proposal for improvements. Implementation of planned improvements. Regular evaluation and adjustments based on defined timelines.

Student Affairs The student affairs aspect of general administration was rated at the highest level. This may be due to: Key Contributing Factors Structured Administration: Schools implement clear policies and guidelines for student affairs management. Stakeholder Involvement: Teachers, students, and parents actively participate in shaping policies and initiatives. Administrative Support: Resource allocation and planning facilitate successful student programs and activities. Technology Integration: IT systems are utilized for student behavior tracking and analysis. These findings align with Pramoon Suwannamajo (2019), who studied student affairs administration in primary schools in Nakhon Phanom Province. The study concluded that effective student affairs management requires student participation, promotes positive behavior and values, and encourages social responsibility.

Educational Coordination and Public Relations The educational coordination and public relations aspect of general administration was rated at the highest level. Key Contributing Factors Emphasis on Stakeholder Participation: Schools prioritize building strong networks with communities and relevant organizations. Use of Technology in Public Relations: Online platforms and social media enhance information dissemination and accessibility. Evaluation and Improvement Strategies: Schools continuously assess and refine their public relations strategies. Collaboration with External Organizations: A strong network of partnerships increases access to resources and support programs. These findings align with Chatchai Tantranon (2019), who studied public relations management at Wachirawit Chiang Mai School. The study highlighted key recommendations for improving school public relations, including: Implementing a modern document management system. Continuously promoting school activities and events. Optimizing human resource allocation. Conducting satisfaction surveys to enhance public relations efforts.

Comparison of General Administration Based on Job Position, School Size, and Years of Work Experience Job Position Affects General Administration ($p < 0.05$) Significant differences were found between school administrators and teachers in their perceptions of general administration. This may be due to varying responsibilities: School administrators have a strategic, high-level perspective. Teachers focus more on practical, operational aspects. This finding aligns with Role Theory (1979), which suggests that roles and responsibilities influence perception and decision-making.

School Size Does Not Significantly Affect General Administration ($p > 0.05$) No significant differences were found in general administration across small, medium, and large schools. Possible reasons: Schools follow standardized policies from central authorities. Resource and personnel allocation is proportionally balanced. This finding aligns with Organizational Structure Theory (1979), which states that centralized administrative structures have a greater impact than organizational size.

Work Experience Does Not Significantly Affect General Administration ($p > 0.05$) No significant differences were found between personnel with varying years of work experience. Possible reasons: Standardized administrative

policies ensure uniform practices. Structured training programs enable new staff to perform similarly to experienced personnel. This finding aligns with Human Resource Development (HRD) Theory and research by Swanson & Holton (2001), which emphasizes that HRD enhances workforce competency through systematic learning, training, and development.

The findings indicate that general administration in the Bang Bo 1 School Group is highly effective, with key strengths in administration, ICT, resource management, student affairs, and public relations. Job position significantly affects administrative perceptions, while school size and work experience do not. These results highlight the importance of leadership, stakeholder collaboration, and technology integration in modern school administration.

13. Recommendations

Recommendations from the Research

1. Administration and Clerical Work – There should be a systematic analysis and evaluation to identify and improve organizational structure and operations, enhancing administrative efficiency.
2. Information and Communication Technology (ICT) Infrastructure – A network system should be developed to connect schools with external organizations, ensuring fast and secure administration and coordination.
3. Resources and Facilities Management – The landscape and infrastructure within the school should be designed and improved to create a learning-friendly environment that supports student well-being.
4. Student Affairs – Activities should be summarized and evaluated to facilitate continuous improvements and development, ensuring they effectively support students' learning experiences.
5. Educational Coordination and Public Relations – Schools should plan and implement public relations strategies to promote educational activities and projects, fostering public understanding and support.

Recommendations for Future Research

1. Future research should explore factors affecting problem-solving in the implementation of general administration in schools under the Samut Prakan Primary Educational Service Area Office 2.
2. Further studies should investigate the effectiveness of general administration practices in schools under the Samut Prakan Primary Educational Service Area Office 2.

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Forms of Accommodation in 8 Mile Movie: How the Characters Implement Communication Accommodation Theory as an Affective Function

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Abstract
Albeit there are several studies invoking CAT as a framework, there are still limited studies wherein analyses the motives through the accommodation's forms. Therefore, this research examined the affective motives by analyzing the accommodation's forms in the characters of 8 Mile considering socio-historical context. To gather the data, this research took several stages including watching the movie, dialogue transcription, conversation listing, and utterances symbolization. Data analysis, moreover, consists of data reduction, data display, and data conclusion. This research found that downward convergence becomes the most frequent form with no upward divergence. In a circumstance where upward divergence is expected, i.e. conflict situation, the white character does the trans-convergence. This novel finding indicates that according to his social value, the white character with SE tends to trans-converge to AAVE dialect in order to achieve social validation and self-verification. Moreover, asymmetrical accommodation occurs within greater extent than symmetrical accommodation. This signifies that there appears an imbalance of perceived value to particular cultural background. Further, for both modality and duration, multimodality appears 24 occurrences pursued by unimodality in 21 occurrences. Finally, long-term accommodation happens with greater frequency than short-term accommodation. The former was 41 occurrences and the latter with only 4 occasions.

Keywords: Communication Accommodation Theory, Convergence, Trans-Convergence, Divergence, Affective Function

1. Introduction

Studies on the communication accommodation are thoroughly not new. There are several intercultural communication studies that invoke communication accommodation theory in various contexts such as family, health care, interethnic settings, diasporic communities, and intergenerational contexts. As far as the existing literature indicates, there is limited study that employs accommodation forms in order to examine the motives of accommodation. As such, this article examined the affective motives by analyzing the forms of accommodation in the characters of 8 Mile movie qualitatively, taking socio-historical context into consideration. To add to that, Dragojevic et al. (2016) argue that there are several forms of accommodation in regard to the social value of the

culture, degree, symmetry, modality, and duration. By invoking the accommodation forms, the researchers argue that the affective motives of accommodation can be explored further. This presumption, further, is validated since this research reveals that the motives of characters' accommodation stance influence the accommodation forms. Nevertheless, the researchers discovered thought-provoking motive that leads to the novel forms of accommodation.

In addition, Palomares et al. (2016) argue that individuals often do not manifest his or her personal identities in the interaction but rather interact based on their membership social categories. However, the researchers in this article claim that the individual's membership of cultural background will not become an evaluation in the intercultural communication if that cultural background does not bring forth any advantages. This presumption, moreover, will be identified via qualitative research with the framework of accommodation theory. Qualitative research has persistently focused on the interaction behavior in its natural setting (Gallois et al., 2016a); thus, the researchers posit the best way to examine the interaction is through qualitative research.

One example of intercultural communication is the encounter between white people and black people community in America. The black people community has its own language variety called African American Vernacular English (hereafter AAVE). This language variety, moreover, has several features that differ from standard English and thus express a sense of cultural distinctiveness to those outside of the community (Holmes, 2013). As stated by Zhang & Giles (2018) knowing how people from different cultures communicate is the key to a good communication. However, People from those two different cultures often ignore the appropriate way of intercultural communication. This kind of communication encounter, additionally, can be seen not only in real life but also in movies.

One movie that contains intercultural communication is 8 Mile movie. This movie was written by Scott Silver and reveals the story of the white character, named Jimmy Smith Jr. who wants to immerse himself in African-American culture in order to gain acceptance and enhance his rap career. Throughout the movie, there are many occasions in which Jimmy engages in numerous interactions with individuals of African-American culture. According to Putra et al. (2024) movies tend to imitate the language phenomena in the real life and therefore can be analyzed linguistically.

Communication Accommodation Theory (henceforth CAT) is relevant to the study of intercultural communication (Gallois et al., 2005). Communication can manage and mediate the interpersonal or intergroup connection and thus its adjustment is important to make that connection even better (Gasiorek, 2016). Additionally, the adjustment can take both verbal or non-verbal language when they like the interlocutor or have personal interest, otherwise, it also can happen in unconscious way (Holmes, 2013; Dragojevic et al., 2016). Moreover, CAT can be treated in three respects, namely convergence, divergence, and maintenance. Convergence is a condition in which a speaker reduces the language difference to his interlocutor. Divergence, on the other hand, is a condition in which speaker deliberately increases the language differences while communicating. Maintenance, moreover, is a condition where speaker remains or does not adjust his/her speech style to the interlocutor (Wardhaugh & M. Fuller, 2015; Elhami, 2020).

There are several studies which followed the framework of CAT in order to analyze the interaction between speakers. As such, these researches mainly focused on the accommodation strategy in families (Mahadhir et al., 2014; Rittenour et al., 2018), health care (Farzadnia & Giles, 2015; Cavallaro et al., 2016), and interethnic setting (Uly & Nurhayati, 2024). The study from Mahadhir et al. (2014), for instance, postulated that the discourse management strategy is used for the multiracial family members to regulate the topic so it does not invoke conflict. Within interethnic communication, in addition, Uly & Nurhayati (2024) found that convergence is utilized in the place they migrated. There is only one study wherein its focuses on the motives of accommodation (Nabila & Munir, 2020). This study, however, did not take socio-historical context into a consideration.

Another studies, on the other hand, treated CAT as a means to scrutinize the communication dynamics in diasporic community (Dorjee et al., 2011; Wu et al., 2023), family (Dumanig et al., 2013), and intergenerational communication (Omori et al., 2024). Dorjee et al. (2011) and Wu et al. (2023) have analyzed the diasporic

communication using CAT as framework. Both works elucidated that the indigenous accommodating their communication style is perceived more positively. As such, high-quality contact between the indigenous and the diasporic can enhance the confidence while reducing the negative perception regarding intergroup communication. Despite the valuable support provided by previous studies for CAT, the researchers determined that this field requires further expanded qualitative research. To date, there is limited study which analyses the communication accommodation motives, especially with the consideration of socio-historical context through the forms of accommodation. In accordance with the previous studies, therefore, this research examined the affective motives by analyzing the forms of accommodation in the characters of 8 Mile taking socio-historical context into consideration.

Prior to the research method, the researchers consider that the theoretical framework of CAT along with its forms and affective motives need to be explained. As such, in an effort to analyze the affective function of CAT in the movie dialogue, the researchers invoke the forms of accommodation. It is considered important to support in-depth analysis of affective motive of accommodation. Referring to the accommodation's form, this research can analyze the affective motive that is correlated with the social value, symmetry, modality, and duration as regulated in the forms of accommodation. In the next following sections, consequently, the researchers indulge the reader with the further explanation of CAT and its relational aspect to support this research.

1.2 Communication Accommodation Theory

Speech accommodation theory (henceforward SAT) was the first name for CAT (Zhang & Giles, 2018). In its first stage, SAT primary focused on how, when, and why people adjust their speech behavior to appear more similar to the interlocutor. This speech similarity process, further, is called as convergence (H. Giles et al., 2023). SAT, then, changed into CAT because of its deeper focus on the communication process which may involve the analysis of intergroup communication and the communication between generations (Gallois et al., 2005). In the intergroup communication, the group salience often emerges resulting in the speaker accentuating his or her communication style to make his or her seem different (Palomares et al., 2016). In this second stage, additionally, H. Giles (2016) asserts that CAT focuses more on the way speakers make social discrepancy so called divergence and non-accommodation.

Both first and second stages, however, focused on the objective behavior of the speaker to accommodate (or non-accommodate) his or her communication style. In its third stage, for that reason, CAT focused on the subjective parameters of communication adjustment (H. Giles et al., 2023; H. Giles, 2016). Along with that, the construction of motives for accommodation happened in this stage which asserts that speaker accommodates because of affective and cognitive motives. In the fourth stage, further, CAT focuses on the intergenerational communication along with over- and under-accommodation.

In order to adjust the communication style, there are three ways speakers can use namely convergence, divergence, or maintenance (Dragojevic et al., 2016). **Convergence** is a circumstance in which the speaker increases the similarity of the communication behavior to the interlocutor in order to gain approval or to become similar. Moreover, this kind of adjustment is utilized when the speaker wants to be accepted in particular generation or culture. On the other hand, if the speaker desires dissimilarity to the interlocutor's communication style, the speaker diverges the language. Thus, **divergence** refers to a state where the speaker decreases the similarity of the communication style deliberately. Moreover, there is a strategy that is similar to the divergence. This strategy leads the speaker to persist his/her communication style neither converging nor diverging, this strategy so called **maintenance** (Gallois et al., 2005). What is more, those communication adjustments can be manifested in various forms. Those forms, further, can be beneficial resources to analyze the dialect change through the accommodation form taking duration into consideration (Dragojevic et al., 2016), as well as the perceived value of various cultures in intercultural communication.

1.3 Forms of Accommodation

The types of accommodation can take multiple forms influenced by social value, degree, symmetry, modality, and the duration of the behavior. In agreement with social value, convergence and divergence can take either upward or downward. Furthermore, they can be described as full or partial taking degree into a consideration. Moreover, it can be symmetrical or asymmetrical accommodation in the viewpoint of symmetry. Then, unimodal or multimodal in the case of modality. The last is short-term or long-term in terms of duration (see Dragojevic et al., 2016 for further reading).

Based on the social value, both convergence and divergence can take form of upward or downward. **Upward convergence** is characterized by the speaker from non-standard accent adapting the communication style of a standard accent speaker. For instance, the French-Canadian worker adopts his/her more prestige English speaker manager (see Sachdev & Giles, 2005). However, when the speaker from standard accent adjusts his/her communication style to non-standard accent is called as **downward convergence**. In addition, **upward divergence** points out to a situation where a speaker with standard accent accentuates his/her style of communication while communicating with non-standard speaker. In a contrasting manner, a circumstance wherein a speaker from non-standard variety accentuates their communication style while communicate with a standard accent speaker is termed as **downward divergence** (Dragojevic et al., 2016; Elhami, 2020).

The speaker adjusting the communication style to his or her interlocutor can accommodate fully or partially. **Full adjustment** indicates that the speaker uses entirely different language for the purpose of making himself or herself similar to the interlocutor. Nevertheless, when the speaker only adjusts for a few words or phrases, it is called a **partial adjustment**. The partial adjustment, moreover, is different from code-switching taking social, psychological, and cultural significance into consideration (Sachdev & Giles, 2005). In addition, there are certain circumstances wherein the speaker adjusts partially because of particular constrain such as his or her ability in the hearer's language. As a result, the speaker with inadequate ability to use the hearer's language will tend to adjust partially (Dragojevic et al., 2016).

The speaker's adjustment can also be investigated in the scope of symmetry, i.e. **ssymmetrical accommodation** and **asymmetrical accommodation**. The former happens when both speakers adjust their speech style reciprocally. This type of accommodation, further, can be seen in the intercultural communication whereby both groups perceive interdependency with each other. Further, symmetrical accommodation triggers the positive language climate within the language groups in society. However, the latter is a condition within which there is one speaker who converge and the other does not, resulting in negative language climate; thus, can be termed also as unidirectional accommodation (Farzadnia & Giles, 2015). Asymmetrical accommodation, furthermore, typically be found when a convergence which is directed toward someone who has a greater power.

The communication adjustment that is carried out by the speaker can emerge either in one dimension or more than one dimension within a certain time. A circumstance when the adjustment only involves one variable or dimension, for example only the accent, it is called as **unimodal accommodation**. However, **multimodal accommodation** is when a speaker adjusts more than one dimension, for example the accent, vocabulary, or any non-verbal language (Song & Shan, 2014). In relation to its time, **short-term accommodation** occurs temporarily and only within one social interaction. On the other hand, **long-term accommodation** occurs continuously over time. The long-term accommodation, therefore, can lead to a dialect or language change for the speaker who accommodates.

All of the accommodation forms, to sum up, can be utilized to analyze the specific motive of communication accommodation that is undertaken by the speaker. For instance, to have insight into the most frequent forms of accommodation in terms of social value, the researchers are aware of the higher-valued culture within one conversation; thus, the speaker converges to secure social rewards (Dragojevic et al., 2016). In addition, this principle also applies in terms of symmetrical and asymmetrical accommodation. Understanding the distribution of accommodation symmetry, the researchers are able to construct the inference about the interdependency (or dependency) among cultures. Within this vein, M. Giles et al. (2021) found that the interactants tend to accommodate when the interdependency is perceived as high. Conversely, the interactants perceiving de-interdependency tend to be less accommodative to the. Consequently, analyzing the forms of accommodation serves as a means to assist the researchers in examining the affective motives of CAT.

1.4 Affective Motives of CAT

From its origin, "affect" means to have an influence on someone or something (Editors of Cambridge University Press, 2009). Furthermore, Merriam-Webster (n.d) states that affective means relating to (or influencing) someone's feelings. Holmes (2013) also stated that when people communicate one and another in order to express a feeling, then they use language's affective function. Given the context of CAT, to add to that, affective function of CAT is defined as a function to make the interlocutor like or feel sympathy for the speaker by appearing similar or likeable (Gallois et al., 2005; Dragojevic et al., 2016).

Following Dragojevic et al. (2016) the affective function of CAT can be represented as cooperative accommodation or non-cooperative accommodation. The speaker who seeks for the approval of his/her interlocutor tends to become communicatively more similar to the discussant. Furthermore, by converging the communication style, the speaker desires the social reward. Subsequently, someone who wants to be accepted by cooperating in the communication style does the **cooperative accommodation**. However, **non-cooperative accommodation** is derived from the desire to emphasize the distinctiveness and to differentiate from one's communication style. In this similar vein, Gallois et al. (2005) described the non-cooperative accommodation is utilized when the speaker desires to show dissatisfaction to his/her interlocutor.

Regarding this matter, Nabila & Munir (2020) discovered that the classroom setting also utilizes the affective motives of communication accommodation. Cooperative accommodation with affective motive has a tendency to be utilized to build the closeness between students and teachers and to avoid the social distance between them. Building the closeness along with avoiding the social distance, teacher ensures the student feels less nervous in classroom conversation. However, previous study examined the communication accommodation motives in the classroom interaction and did not examine its forms. As such, there appears a question about how do the affective motives influence the accommodation's forms exhibited by the characters in 8 Mile movie, considering the socio-historical context of the film? This research question is supporting the suggestion by (Gallois et al., 2016b), who assert that analyzing accommodation in different contexts and methodology is required for advancing theoretical development. With respect to analyzing the movie dialogues, the researchers took several research procedures, as elaborated in the next section.

2. Method

This study aims to discover the motives of accommodation in the 8 Mile movie through the forms of accommodation that are used by the character. Therefore, this research implemented the qualitative research method since qualitative research method tries to discover the motive of phenomena (Morissan, 2019). Additionally, Tracy (2013) asserts that qualitative research method is a useful tool for examining the social issues such as ethnicity and race. Therefore, according to these experts, the qualitative research method is a useful method in order to discover the characters' communication accommodation throughout the movie.

Within similar vein, Gallois et al. (2016a) stated that mainly research for CAT was conducted in experimental studies. According to them, on the other hand, qualitative research is important in CAT framework because it emphasizes linguistic behavior in situ (within the natural setting). Further, sociolinguistics' scholars often use qualitative study with CAT framework to analyze the language changes indicating social group's linguistic movement whether it converges to or diverges from (Gallois et al., 2016a). As a result, the data in this research were not in the form of numerical data.

2.1 Data Collection and Analysis

All the of data, which were in the form of words, phrases, clauses, and sentences from the characters' conversation, were obtained from several stages. Firstly, the researchers watched the movie in order to comprehend the story line. Secondly, the researchers transcribed the movie dialogue into written discourse to ease the analysis process.

Then, the researchers listed the conversation which contains the communication accommodation. Finally, the researchers symbolized the conversation. These stages facilitated researchers to analyze the data.

In order to analyze the data, the researchers applied the theory from Miles & Huberman as stated in Morissan (2019). There are three stages in order to analyze the data. Firstly, the researchers reduced the data. All of the unnecessary data, therefore, were neglected. Secondly, the researchers displayed the data. The last stage is data conclusion in which the researchers associate the theories and the research result.

3. Results

This research applied Dragojevic et al. (2016) with regard to exploring the forms of linguistic accommodation within the chosen movie. With this theory, further, the researchers examined whether the character from higher social prestige will converge or diverge and vice versa. On the other hand, the researchers did not examine the full or partial accommodation. It is because the characters of the movie utilize one language with different dialect. Additionally, there are 68 speech events throughout the movie. Further, the communication between SE speaker (Jimmy) and AAVE speakers (Jimmy's friends and rivals) appeared as much as 45 conversations.

Given the **social value** of accommodation forms, SE speaker converges downwardly as much as 26 times. From affective perspective, SE speaker wants himself to be accepted in the African-American culture. Extract 1 demonstrates how white person in this movie tries to converge downwardly to the African-American people.

EXTRACT 1 (00:15:37)

Jimmy : Yo, don't tell nobody I'm living back here∨, **man**∧

Wink : **Aight, dawg**. What happened last night I heard you got caught out. People (***are***) saying some fucked up shit.

Jimmy : Yeah?

Wink : Yeah.

Wink : Man why (***are***) you still going to The Shelter, **dawg**? There's nobody there but a bunch of clowns.

Jimmy, in this exchange, converges to the AAVE dialect because of the double negative feature. Double negative, moreover, can be marked on the auxiliary and indefinite pronoun (Green, 2002). In the SE, the double negative means that the sentence has a positive meaning. Jimmy, which comes from the white community, utilizes this feature to communicate with the AAVE speaker. This means that Jimmy wants to be accepted in the African-American society by adjusting his interaction style to be more similar.

In an attempt to be accepted, the SE speaker does not only converge downwardly, but also does the trans-convergence. The trans-convergence can be depicted when the SE speaker wants to be regarded as the one who comes from the same cultural background as he regarded himself and thus his anger is validated. One conversation of trans-convergence is presented in extract 2.

EXTRACT 2 (01:09:28)

Future : Jimmy, you know Papa Doc won last week, so he'll be defending his title. You gotta try to take that shit man. You win battles, you get respect

Jimmy : I don't give a fuck∨, man∧. I'm sick of you thinking you know what's best for me, **dawg**∧. You **ain't** my fucking father. **Imma** grown man.

Future : Look, Jimmy--]

Jimmy : --[Look, nothing! Fuck you, I told you not to **fuckin'** sign me up!

Future : Yo, what the fuck so you wanna fight me now?

Jimmy : Yo, you **ain't** the future of shit

In this scene, Jimmy has a high-tension of exchange with Future. He, furthermore, does not do the upward divergence given that he comes from the higher cultural value. However, he converges to the AAVE speech style by using its feature *ain't*. Further, he also applies the structure of AAVE that is Imma and he accentuates his

accent. Given the affective function as a consideration, this indicates that Jimmy wants his anger and utterance to be validated by the targeted culture; thus, he trans-converges his speech style.

Conversely, this movie's conversation also shows us that the African-American people refuse the outgroup member to join them by diverge downwardly. This kind of divergence highlight a point that some of African-American speakers realize that there is no urgent prominence in converging to the higher social valued dialect. Extract of the movie dialogue number 3 demonstrates how downward divergence occurs within the movie.

EXTRACT 3 (00:03:24)

Men on the hall : The fuck∨, **man**∧. Who the fuck is you, **nigga?** Where's you going?
Jimmy : Backstage. I'm in the battle.

In this scene, two men in the hall use the feature of AAVE especially the sentence structure. The subject-verb agreement of the utterance does not follow the SE pattern and is typically common in AAVE. Moreover, the use of the addressee term *nigga* in this utterance clearly to show identification of one's cultural background. However, Jimmy is from white culture and thus this greeting is clearly to emphasize that Jimmy does not belong to them.

In addition to the previous extract, there appears also a circumstance in which the African-American speaker adjusts their communication style to white people. They do this in order to show the empathy toward SE speaker. This finding is in line with the theory from Dragojevic et al. (2016) that invokes the initial orientation as the factor of decision whether the speaker will accommodate or non-accommodate.

EXTRACT 4 (01:24:54)

Sol : What's up, man? What the hell is happened to you?
Jimmy : I'm fine--]
Sol : --[Wink said crazy **shi'**∨, man∧.

In this extract, Jimmy's friends are worried about Jimmy's condition. Then, one of his friends named Sol asks Jimmy *what's up, man?* which follows the sentence structure of SE; However, throughout the movie, all the characters always use the structure of AAVE. As a result, it can be seen that the upward convergence in this movie's dialogue is utilized in order to show the empathy to the hearer which comes from the culture that has higher social prestige.

The forms of accommodation in regard to the social value illustrate us that there is an imbalance between the value of the culture in the interaction. One culture is regarded as higher while the counterpart is lower. To add to that, the **symmetry of accommodation** shows us the perceived cultural value of the exchange. The symmetrical accommodation implies that there is a balanced perception of interlocutors in regard to the prestige of the culture; thus, there is downward convergence and upward convergence simultaneously as extract 5 illustrates.

EXTRACT 5 (00:04:48)

Jimmy : Yo, can I get some fuckin' privacy here∨, **man?**∧
Future : Alright, c'mon. My bad, man.
Jimmy : If something's gonna happen with this shit, it needs to happen now
Future : I feel you. I know exactly what you (***are***) talking about

In this speech, Jimmy accommodates his communication style to the AAVE dialect in the level of accent and pronunciation. Jimmy, furthermore, change the pronounce of *fucking* /ˈfʌkɪŋ/ to *fuckin*' /ˈfʌkɪn/. On the other hand, Jimmy's interlocutor, Future, also converges his communication style to SE dialect. He uses alright with a standard pronunciation instead of just saying aight' like the AAVE typical. However, this symmetrical accommodation only occurs temporarily.

On the contrary, there are also conversations wherein one of the speakers converges while the counterpart diverges. As a consequence, this leads to the asymmetrical accommodation. In this movie there are 44 conversations to which the characters accommodate asymmetrically while communicate with the interlocutor. The extract number 6 demonstrate how asymmetrical accommodation is carried out in the exchange.

EXTRACT 6 (00:19:01)

Jimmy : What (is) up, Manny?
Manny : You **was** late today, Smith.
Jimmy : Yeah, it wasn't my fault. My car wouldn't start--]
Manny : --[It **ain't** never your fault. I don't wanna hear.
Jimmy : I guess **prolly** isn't the best time I really need some extra shift, man--]
Manny : --[Are you shitti**n**' me? You just started working here.

In the exchange above, Jimmy converges his language to AAVE by the deletion of be in his first utterance. However, his interlocutor, Manny, diverges his response. He emphasizes the difference between them by using the feature of AAVE, that is the non-standard verb agreement *you **was** late today*, Smith. In the next following utterances, Manny emphasizes their distinctiveness to a greater extent by using another feature of AAVE, which is the negative form of *ain't*. This kind of conversation is considered as asymmetrical accommodation since one party converges and another, however, diverges.

In **modality** perspective, the adjustment in someone's communication can be either unimodality or multimodality. In the extract 7 below the researchers provide one conversation in which the character only adjusts one element.

EXTRACT 7 (00:59:33)

Sol : Dawg, we sign a deal, you can take the mother fucking benefits. We (***are talking***) Bentleys and **Benjamins**, not blue cross --]
Future : --[I don't give a fuck about that, Man. I swear I wanna hear Three One Third on the box, you know what I'm sayin', one of them songs on JLB --]
DJ Iz : --[All we need is to save that shi' up and put it into savings bonds and build our own stu --]
Future : --[Saving bonds--]
Sol: --[Lemme ask you some questions. How the fuck are we brothers?
Jimmy : All we ever do is talk(***ing***) shit! "*we need find bitches and phat rides, we need to invest in savings bonds, we need to get our songs on JLB*" Shut the fuck up! And we never do shit about **nothin**'. We're still broke and live at home with our mums. **Imma outta** here, I'll catch you guys later.

In this conversation, Sol, Future, and DJ Iz talk in AAVE dialect communication style. It can be seen by the use of slang "*benjamins*" in Sol's first utterance which, according to Widawski (2015), means money. However, in the last utterance of this exchange, Jimmy converges his language to the AAVE dialect. Further, he utilizes only the non-standard structure which becomes the typical in AAVE dialect. Jimmy uses double negative never do shit about *nothin'* in his sentence.

Assuming that Jimmy converges his structure as well as the accent, he then converges with multimodal. This multimodal accommodation Extract number 8 provides the example of multimodality accommodation within the movie dialogue.

EXTRACT 8 (00:26:48)

Future : Yo, Rabit, what's happen in that **damn hood**∨, **man**∧--]
Jimmy : --[Yo, just a short, man. Chill out∨
Sol : I **ain't** getting back to tha' piece of shit. It's a death trap
DJ Iz : I think Jimmy's mum **trynna** kill '**im**
Sol: She's so **God damn** --]
Jimmy : --[Hey don't **be saying** shit about my mom, **man**. I hear everything
Sol : --[fine.
Sol : He (***is***) a ninja now.

In this extract, Jimmy accommodates his communication style to his friends' communication style. Further, he uses the accent and also the sentence structure of AAVE dialect. The use of chill out also indicates that Jimmy converges with the African-American culture. In *Hey don't **be saying** shit about my mom, man. I hear everything*, Jimmy wants to emphasize that Jimmy does not want his friend to talk about his mother regularly or repeatedly.

The conversation accommodation, to add to that, has the potential to be either short-term or long-term if take the **duration** as the evaluation. The exchange of this movie reveals that the short-term accommodation is implemented to show empathy to the interlocutor as extract number 9 exemplifies.

EXTRACT 9 (01:22:04)

Manny : **Are** you alright?
Jimmy : I feel down some steps
Manny : You've been doing much better here. Still want those extra shifts?
Jimmy : Yeah
Manny : You got them. I need you to work tonight.
Jimmy : Tonight?
Manny : Is that a problem?
Jimmy : No problem
Manny : Good (…) get back to work

In the first utterance of this conversation, Manny uses the typical feature of SE which follows the grammatical rule although mainly uses the AAVE non-standard grammatical form (see extract number 6). He does this in order to accommodate his communication style to Jimmy to show his empathy. Nevertheless, at the end of this communication, Manny uses the accent of AAVE dialect. Therefore, this is regarded as short-term accommodation because the adjustment only happens for a short time.

The adjustment that happens for a long time, conversely, is called as long-term accommodation. The long-term accommodations in this movie are mainly employed by the white character. Extract number 10 highlights the way white character continuously utilizes the feature of AAVE in his rap style.

EXTRACT 10 (00:55:16)

Jimmy is trying to rap in his work place

Jimmy : Hey, why (***are***) you fuckin' with the gay guy, G?

In this rap battle, Jimmy also uses the feature of AAVE. He uses the call G. This call is used to mark the secrecy call between the member of African-American culture (Widawski, 2015). Furthermore, Jimmy utilizes this to show his membership and belonging to the group of African-American culture. He converges in every part of his rap battle and communication with his fellow worker. Therefore, this accommodate is viewed as long-term accommodation.

From all the forms of accommodation that have highlighted, some data show that by accommodating the communication style, the speaker desires social reward (see extracts number 1, 5, 6, and 10). However, as datum number 2 demonstrates, the speaker also accommodates their speaking style to show anger and he wants their anger to become validated by the culture of black people. Affective function, in contrast, is utilized also to diverge the conversational approach to the interlocutor (see data numbers 3 and 6). For this reason, the researchers assume that the general discussion is required in order to do in-depth analysis.

4. General Discussion

Dragojevic et al. (2016) assert that the form of accommodation may vary, firstly, because of the social value of the language. Those variations of social value are upward divergence, upward convergence, downward divergence, and downward convergence. In the movie entitled 8 Mile, the most frequent form of accommodation is downward convergence consisting of 26 occurrences. Then, this is followed by downward divergence in quantity on 22 occasions. Further, for upward convergence occurs in as much as only 3 conversations. Upward divergence, furthermore, does not appear within the conversation of the movie. In the viewpoint of affective function, the desire of SE speakers to be acknowledged by the black people community becomes the reason of why downward convergence is the most frequent form of accommodation.

The predominance of downward convergence in this movie contrasts with the findings from Taqavi & Rezaei (2021). Albeit previous study did not invoke CAT as a framework, the result of their study is close related to the

way people choose language variation to communicate in regard to the perception of social value. Further, the previous study has attested that when Azerbaijani bilinguals in Iran want to be perceived as an educated people, the higher variety of languages is favoured. As such, some of bilinguals contended that when they are using lower variety, they will be judged as low-class people and have low-level of education. As a result, it can be concluded that the choice of the dominant language is based on the societal pressure. Opposed to the previous study, recent study shows that the speaker might be accommodate or choose lower prestige of language to communicate. The white character in this movie named Jimmy chooses to accommodate his communication style to African-American language wherein this language variety is a lower variety. According to Dragojevic et al. (2016), someone who adjusts to socially marked communicative behaviour, such as dialect, can be motivated by the intention to signal the shared group identity and thus categorized as affective motive. Consequently, the researchers postulated that the language choice to accommodate is affected by the societal pressure or personal intention.

The adjustment to the higher prestige of language can be manifested in upward convergence. The upward convergence in this movie, to add to that, is under the theory of group-identity accommodation. According to Bernhold & Giles (2020) group-based identity is an adjustment of communication that emerges when one of the "family member" belong to another social group which is not shared with other members. The multi-ethnic and multi-religions solidarity, further, can be constructed by taking group-based identity accommodation into evaluation. For this reason, the upward convergence is germane to the finding of this research which members of the rap community who converge upwardly to Jimmy want to show solidarity of their shared membership albeit in intergroup (i.e. multi-ethnic) communication. Conversely, there is no occasion for upward divergence is because the SE speaker perceives that there is no point in doing that. On the contrary, it may lead to the prevention of his goal to be accepted in the black people community.

There are certain circumstances wherein the speaker does not diverge upwardly to the interlocutor, albeit there is a negative sentiment to the interlocutor's belonging group. For example, in the condition that requires the role-governed such as the interview of scholarship (see Palomares et al., 2016 for further reading). Moreover, upward divergence does not emerge in this movie dialogue when SE speaker is angry toward the AAVE speaker. However, according to Gasiorek & Giles (2013), speaker will non-accommodate or diverge his or her speech style to signal disrespect or anger to the interlocutor in a conflict situation. Since intergroup relation is the key predictor for the emergence of divergence (see Palomares et al., 2016) the conversation between white character (SE speaker) and the black characters in this movie indicates that this does not invoke the intergroup relation between interlocutors.

Equally important, if two cultures have been involved in violence event in the past, the speaker tends to diverge from one and another to highlight group identity. In this vein, to achieve group distinctiveness, speaker is likely to consider group vitality subjectively consisting the reflection of group's status, demographic, and institutional support (Giles et al., 2021; Dragojevic et al., 2016; Gallois et al., 2005). This construction asserts that the speaker tends to non-accommodate including diverge upwardly. The character of SE speaker (higher prestige) in this movie, on the contrary, accommodate his speech style in the conflict situation due to his self-need toward the lower prestige group.

The white identity of SE speaker in this movie does not bring any advantage (Wang, 2021) and thus he desires other people to perceive and verify him as an African-American person. Moreover, as Franzese (2013) states, the self-need for verification can influence how people behave. Self-verification itself refers to the desire of individual who wants other people to perceive himself or herself as the way he or she perceives himself or herself (Talaifar & Swann, 2020). What is more, the social categorization of the speaker, i.e. ethnic group, can be measured by the language variety that he or she utilizes (Dragojevic et al., 2019).

From the communication accommodation standpoint, this can be interpreted as trans-convergence. Trans-convergence, hence, points out under which an individual acknowledges himself or herself as the part of one particular culture and tries to converge further despite certain condition. This, further, is feasible when an individual desires other people to identify himself or herself as a part of a culture that he or she converges to. This new discovery validates the researchers' former assumption that the individual's group membership will not be evaluated in intergroup communication if it does not provide any benefits, and thus, the conflict between two

people from two different groups might be accommodate one and another taken self-need as the greater consideration than the past or current relation of the group.

Apart from the social value, another form of accommodation can be in the form of its symmetry. Asymmetrical accommodation becomes the most frequent form of accommodation with total 44 occurrences, followed by symmetrical accommodation with only 1 occurrence. This distribution discrepancy, further, shows us that there is an imbalance perception toward one social group and another in this movie. Considering its social relation, following Gallois et al. (2005), vitality becomes the strongest reason for social prestige imbalance. There exist structural factors that consist of status, demography, and institutional support that influence the establishment of vitality. According to these three factors, it is noticeable that the SE speaker has higher social prestige in practice, and as Dragojevic et al. (2016) attest, there is an expectation that speakers of lower social prestige will converge toward those of higher prestige; however, AAVE speakers in this movie diverge more, even though the SE speaker converges his speech style, resulting in asymmetrical accommodation.

The discovery corresponding to accommodation symmetry is in line with (Lindell et al., 2023) which analysed the role of ethnolinguistic vitality in language climate. The higher ethnolinguistic vitality is perceived, according to them, the more likely they create negative language climate. The negative language climate refers to the undesirable relation between minority and majority language group. This research, thereafter, defines the negative language climate will trigger asymmetrical accommodation. In brief, African American community in this movie perceived high vitality, and thus creates negative language climate which led to the domination of asymmetrical accommodation.

Another research, in addition, has described the willingness to accommodate the communication style (Giles et al., 2021). They state that when the speaker perceives greater interdependency on other groups, his or her attitude towards communication with members of those groups tends to improve and accommodate easily. However, if the speaker does not see any interdependency toward outgroup members, his or her language use becomes more abstract and less concrete. Given these propositions, the researchers argue that the character of white people in this movie perceives higher interdependency toward African-American culture in order to be acknowledged as a member of that particular culture. African-American people in this movie, on the contrary, observe that there is independence in their culture taking economic ties as a parameter. In other words, they think that there is no urgency to accommodate to the higher prestige culture.

Following modality, the most frequent form of accommodation is multimodal accommodation. In communicating their thoughts, wants, or feeling, the character desires warmth and therefore they accommodate in many aspects such as accent, sentence structure, and lexical level. This finding, in addition, can support the research that was conducted by Svensson (2023) that analyzed the linguistic discrepancies in the refugee settlement. Although this research did not invoke CAT framework directly, but the results are close related. She reveals that linguistic accommodation or the lack thereof can lead to feelings of exclusion, as refugees struggle to participate in interactions. This finding is supported by the recent study which demonstrates that the use of multimodal accommodation in the conversation can give warmth to the interlocutor and thus conjures feeling of inclusion. As such, when speakers adapt their communication style, they create an environment of greater empathy and inclusivity which likely improves social cohesion. In short, through the lens of affective motives, the use of multimodal accommodation can enhance positive social relations and diminish the exclusion by the lack of adjustment.

The long-term accommodation that is used mainly by SE speakers might lead to the dialect-change. The dialect-change that is created by the long-term accommodation, further, correspond to the acculturation and assimilation as postulated by the previous research (Omori et al., 2024). Their research elucidated that the young and middle-aged speakers judged older speakers as outgroup members and tended to non-accommodate to them despite that the older have a cultural commonality. However, the young and middle-aged accommodate and adopt dominant culture even more. As such, this kind of behavior can be termed as avoidant communication and has negative implications in intergroup communication. This previous study, furthermore, is in line with the recent study wherein speaker of SE accommodates to the dominant culture albeit certain conditions and thus downplayed his

own. The domination of long-term exceeding the short-term accommodation denotes that the motivational background of accommodation is to enhance the social liking and gain approval by the dominant culture; thus, speaker of SE acculturates to the African-American culture. This commonality highlights important point that the long-term accommodation is a linguistic strategy to acculturate and eventually leads to permanent dialect-change.

5. Conclusion

Of all the 68 speech events in this movie, 45 of them involve the intercultural communication. These communications lead to particular affective function of each speaker. Taking social value as consideration, downward convergence occurs as many as 26 with 1 trans-convergence. The case where upward divergence is expected, on the other hand, the character of SE speaker converges even more taking his self-verification as a consideration. This means that the SE speaker tries to join an African-American social group and thus he has to converge his speech style to that culture. There is an imbalance, further, taking symmetry as scrutiny. Asymmetrical accommodation arises 44 occurrences with only 1 symmetrical accommodation. This implies that there is an imbalance of considered value among the speakers. In addition, both of multimodal accommodation and long-term accommodation become the most frequent form of accommodation. This suggests that all the characters prefer more than one aspect to adjust while communicating with interlocutors coming from different cultures.

What is more, this research is limited in its scope; thus, the researchers offer two recommendations for the subsequent research. Firstly, the next research should be focus on the social psychology of the characters to their behavior of communication accommodation. This leads to the expansion of the communication accommodation theory from intergroup relation to individual's self-needs to accommodate the communication style. The next researcher, further, can utilize the self-conception theory that constructs the communication behavior of the speaker in intercultural communication. Secondly, beside its affective motive, communication accommodation theory has its cognitive motive. The next research, to add to the recommendation, should pay attention to the cognitive motive of the communication accommodation behavior of the character. These two recommendations facilitated to the enlargement of the communication accommodation theory with its possible changes taking self-need as a consideration.

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The Status of Resource Availability and Science Teaching at the Junior High School Level in Ghana

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Abstract
The study focused on the status of teaching and learning of science at the Junior High School (JHS) level within the Ghana Education Service (GES). It looked at key features of quality education delivery such as teaching strategies and availability of resources for teaching science at the JHS level. The research design was a cross sectional survey involving 9 public schools in the northern region of Ghana. The sample size was 45, consisting of 9 science teachers, and 36 students. Tools used for data gathering included a questionnaire, an interview guide and an observation checklist. Through the study, it came to light that issues such as inadequacy and unavailability of resources as well as the use of teacher-centred approaches militated against the smooth learning of science by students. Recommendations made include the training of teachers on improvisation as well as the conduct of regular professional development sessions for teachers.

Keywords: Improvisation, Learner-Centred Pedagogy, Activity-Based Learning, Social Constructivism

1. Introduction

Science is one of the core subjects accounting for the promotion of students from Junior High School Level (JHS) to the Senior High School Level (SHS). At the JHS level, Integrated Science is one of the subjects that learners find difficult to understand (Adu-Gyamfi, 2014).

The WAEC Chief Examiners report of 2016 cited the poor performance of candidates in the BECE Integrated Science Paper. As pointed out by Anamuah-Mensah et al. (2017), a myriad of factors account for students' poor performance in science. At the Junior High School level, several factors have been identified to be contributing to the poor performance of students in science (Adu-Gyamfi, 2014). These include the instructional approach of teachers, curriculum overload and home background of learners (Igbo & Omeje, 2014). Other contributory factors to students' poor performance in science are poor quality of teachers, unavailability and inadequacy of teaching and learning resources as well as ineffective school leadership and lack of efficient supervision (Dass & Yager, 2009).

Teacher competence is a principal factor in the academic achievement of students in all subjects including science (Yeboah, 2016; Marzano et al., 2000). Thus there is an imperative need to make adequate provisions to enable teachers effectively carry-out their mandate.

Azure (2015) has stressed on the integral role of teachers in the successful academic achievement of students. NaCCA (2020) stressed that in the study of a practical-oriented subject like science, skilled and competent practitioners are critical to the learning process.

The northern region is one of the sixteen (16) administrative regions of the country. The trend in BECE results from the region in recent years shows that generally students underperform in the integrated science paper (WAEC, 2020). Considering the importance of integrated science as a subject that lays the foundation for further learning of science at the SHS level, this unfortunate trend calls for immediate intervention. In the present study, the intended outcome was to identify the status quo with regard to the delivery of science education at the JHS level within the northern region of the Ghana Education Service.

Data from the 2021 population census cites the northern region as having a greater number of inhabitants based in the rural areas. In a typical rural community in Ghana, issues such as poor supervision, ineffective leadership, unavailability and inadequacy of teaching and learning resources characterize the teaching and learning process (Donkoh, 2016). Goodpaster et al. (2012) revealed that urban-based teachers exhibited better professional ethics than rural-based teachers. Similarly, Shadreck (2012) observes that generally urban-based schools were more likely to be better stocked in terms of relevant learning resources than rural schools. In the light of policies and interventions to boost universal access to quality education as enshrined in policy documents such as the Education Strategic Plan (ESP) of 2018 – 2030, the National Pre-tertiary Education Curriculum Framework (NPECF) and the National Teacher Education Curriculum Framework (NTECF), there is the need to identify and address the bottlenecks to the attainment of quality pre-tertiary education. Considering the importance of science as a subject that lays the foundation for further learning of science at the SHS level, this issue calls for immediate attention. For this reason, the study sought to identify the status quo in terms of teaching approached used by science teachers as well as the level of science resource availability and adequacy at the JHS level within the country. The overarching aim is to come-out with findings and appropriate recommendations for improving learning outcomes in science at the JHS level.

2. Literature Review

2.1. The role of Teaching and Learning Resources in Science

Instructional resources are the pillars based on which learner-centred teaching of science is driven. That is to say, no meaningful learning of science can take place devoid of the use of appropriate resources.

As observed by Yildirim (2021), these resources promote easy learning understanding of concepts and acquisition of skills. Many studies including that of Igbo and Omeje (2014) give evidence that the use of resources leads to improved academic performance of students.

The issue of absence or inadequacy of TLRs is a mainstay of education in Ghana particularly at the pre-tertiary level (Okhiku, 2005). This problem is more prominent at rural-based schools compared to urban schools (Tety, 2016; Yeboah et al., 2019). Adeogun (2001) found out that public schools in particular lacked access to basic resources such as measurement equipment, laboratory apparatus and chemical reagents critical for effective lesson delivery. Okobia (2011) stressed that the inadequacy of appropriate resources makes science learning difficult. Several factors account for the failure of teachers to use resources in lesson delivery. These include (1) unavailability or inadequacy of resources, (2) lack of funds, (3) poor maintenance of existing resources (4) absence of storage facilities (5) lack of expertise by teachers, (6) misconceptions on the usage of resources. This has ultimately led to the situation whereby teachers resort to the lecture method of teaching, which is not appropriate for a practical-oriented subject such as science (Makokha & Wanyonyi, 2015). This inhibits the acquisition of science process skills such as observing, manipulating, analyzing, experimenting, measuring and evaluating. The increasing role of ICT in education delivery was expected to serve as a supplement or in some cases substitute for the absence of realia so far as practical science learning was concerned (Magawata et al., 2011). This is made possible through access to videos, pictures, virtual laboratories and other e-resources on various science concepts. Unlike urban-based schools, rural schools are unable to gain access to these resources due to a number of reasons

including absence of electricity in the school, absence of ICT logistics and storage facilities, lack of technical know-how by teachers (Abba Iya, 2008).

In the absence of resources and ICT equipment, science teachers are expected to resort to improvised learning resources to enable them conduct effective activity-based lessons. However various researchers bemoan the low improvisation skills of science teachers (Be-Bassey, 2012). The culmination of these factors results in the failure of students to understand key science concepts as well as the inability to acquire essential scientific skills needed for successful study of the subject and further progress in the subject at higher levels of education.

2.2. Teaching and learning of science at the basic level in Ghana

The standards-based curriculum which was implemented in Ghanaian basic schools in the 2019/2020 academic year stipulates that teachers are expected to conduct lessons in a learner-centred manner, guide and assist learners to create their own knowledge (NaCCA, 2019). This can be attained in an atmosphere where teachers adopt approaches and strategies that create opportunities for students to interact with each other and with relevant resources throughout the learning process. In the words of Dass and Yager (2009), the role of the teacher is to provide an enabling learning atmosphere that makes use of relevant strategies to ensure active student participation in the learning process. The CCP science curriculum stresses on learner-centred teaching. It also talks about a key aim of science learning as developing a new generation of students who are scientifically literate and who apply scientific principles to solve everyday problems (NaCCA, 2020).

Learner-centered methods that promote deep understanding and the acquisition of skills and competences include activity-based methods, group work, role-play, simulations and demonstrations (Muzumara, 2011). Previous studies (Picciano,2009; Namrata, Amrita, & Singh, 2014) prove the efficacy of these methods in promoting conceptual understanding and improved attitudes of students towards the study of science. Anney and Hume (2014) found out that many science teachers fail to use such participatory teaching strategies. Similarly, Kuyini and Abosi (2014) noted that the lecture method is the prominent pedagogical approach of most science teachers. Though the lecture method has the advantage of being time efficient and requiring less resources for lesson preparation, it is deemed unsuitable for science teaching based on a number of reasons. Firstly, it does not ensure active participation of learners. It also inhibits the acquisition of skills and competencies (Ohle et al., 2015). As noted by Poggi et al., (2017) students taught using the lecture method are more likely to develop misconceptions about various science concepts. There are several reasons responsible for teachers' failure to use learner-centred approaches in delivering lessons (Gurganious, 2017). These include large class sizes, unavailability of resources, lack of motivation and lack of regular in-service training. Previous studies (e.g., Borko et al, 2010; Van Es, 2012) reveal that when teachers are taken through regular professional development sessions, it results in better teaching and a corresponding enhancement in students' achievements. It is necessary for stakeholders to factor these challenges into teacher education curriculum and the content of professional development programmes so that all bottlenecks that hinder teachers from employing learner-centered approaches in science teaching are effectively addressed.

3. Objectives

The study sought to attain the following objectives:

1. Identify the teaching and learning strategies used by JHS science teachers within the Northern region.
2. Determine the kind of resources available for teaching science at JHSs within the Northern region.
3. Find out the suggestions from stakeholders (teachers and students) towards improving science teaching and learning at the Junior High School level.

4. Research Questions

1. What are the teaching and learning strategies used by Junior High School science teachers within the Northern region?

2. What are the resources available for teaching science at the Junior High School level?
3. What are the suggestions from stakeholders (teachers and students) towards improving science teaching and learning at the junior high school level?

5. Methodology

The study employed the mixed methods approach. Dillman et al (2014) suggest the use of the mixed method when one method may not be adequate and also to reduce the potential of measurement error. The research design used in the present study was a survey. A survey makes it possible to make generalizations about a larger population from a smaller one (Singleton & Straits, 2009). As Ponto (2015) points out a survey allows the researcher to use a plethora of strategies to recruit research subjects and gather data through the utilization of different instruments. In this study, the survey was used to enable the researcher gather sufficient data about the trend in teaching and learning in the 16 schools within the northern region by carefully selecting respondents based on different biographic settings. Stratified random sampling was used to select nine schools within the region consisting of 3 each from rural, semi-urban and urban schools within the region.

Out of this, nine schools were involved in the study. From each school a total of 5 respondents were selected, consisting of one science teacher, two male students and two female students. Thus, a total of 45 respondents were involved in the study. Consisting of 9 science teachers and 36 students.

The schools in the region were grouped into urban, peri-urban and rural schools based on their demography. Three each of the schools under each category were randomly selected. The science teachers in each of the nine selected schools were selected to be part of the study. In instances where there were 2 science teachers, one was randomly selected. The students in each school were placed into two groups, males and females. Two males and two females were randomly selected from each group. These approaches were adopted to ensure fair representation of schools, teachers and students from different backgrounds in terms of gender and demography.

A questionnaire and interview guide were used to gather data from science teachers and students within the selected schools. Frankel and Wallen (2000) stressed the purpose of a questionnaire as helping to find out what is on people's minds, what they think or how they feel about something. Both the questionnaire and Interview Guide were used to gather data from the science teachers. Dillman et al. (2014) suggest the use of the mixed method when one method may not be adequate and also to reduce the potential for measurement error.

An interview guide was used to gather data from the students. An interview guide is helpful because, the interviewer can use probing comments to obtain more information about a question or topic and can request clarification on an unclear response (Singleton & Strait, 2009). A checklist was used to determine the level of resource availability in each school.

The data gathered using the questionnaires was analysed using the SPSS software. The information gathered with the interview guide was also analysed using a thematic approach. This enabled the researcher to identify recurring themes from the responses provided by the study subjects. The data gathered with the observation checklist was also analysed thematically to augment data gathered with the aid of the questionnaire and interview guide. The frequencies and percentages of the data gathered with the questionnaires were computed to aid in easy interpretation and understanding.

6. Results and Discussion

6.1. Demographic Data

Table 2: Distribution of Schools based on location

Urban Circuit	Peri urban	Rural
Kpandai D/A JHS	Buya Destiny JHS	Kumdi D/A JHS
Kpandai Girls Model JHS	Katiejeli EP JHS	Bankamba JHS
Balai D/A JHS	Buya D/A JHS	Kojoboni JHS

The urban-based schools involved in the study were Kpandai D/A JHS, Kpandai Girls Model School and Balai D/A JHS. The peri-urban schools were Buya Destiny, Katiejeli EP JHS and Buya D/A JHS. Kumdi D/A JHS, Bankamba JHS and Kojoboni JHS were the three rural-based schools that took part in the present study.

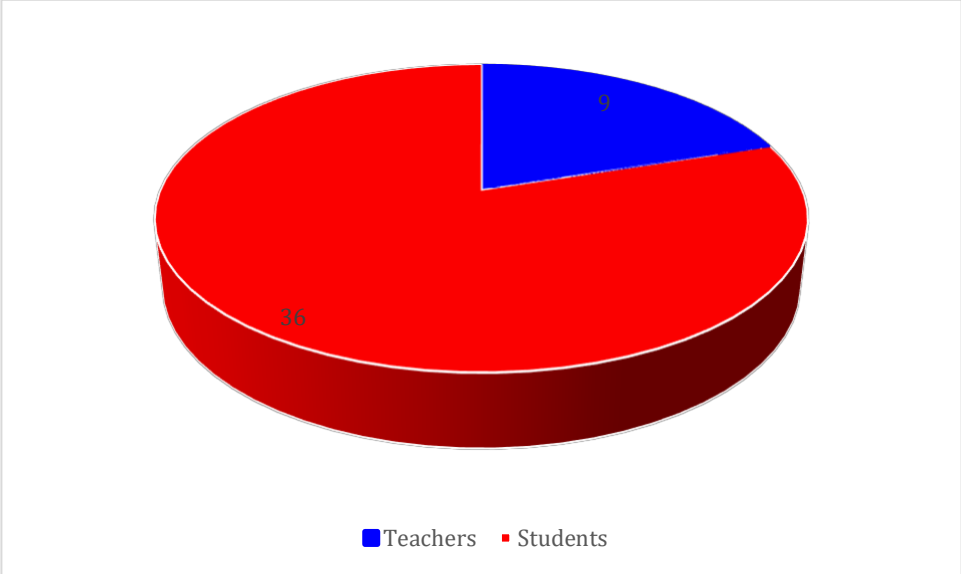

Figure 1: Distribution of Respondents involved in the Study

6.2. The Teaching and Learning Strategies used by Science Teachers

6.2.1 Analysis of Teachers Responses

Data gathered with the aid of the questionnaire for teachers revealed that, the JHS science teachers within the Northern Region used a plethora of teaching and learning strategies for science teaching. Six out of the 9 respondents representing 66.7% of the teachers involved in the study indicated that they used the discussion method for lesson delivery.

A further 7 of the respondent teachers revealed using various group work strategies during science lesson delivery. Notably, only two teachers cited the usage of project-based learning as a key method of science teaching. Five out of the 9 respondents indicated that they used the demonstration method during science lessons.

Table 3: Teaching Strategies used by Science Teachers

Teaching Approach	Frequency	Percentage
Discussion	6	66.7%
Demonstration Method	5	55.6%
Group Work	7	77.8%
Project Based Learning	2	22.2%

The data provided in Table 3 reveals that teachers seldom used the activity-based method of science teaching and learning. It can also be seen that none of the respondents used learner-centered methods such as role play and simulation during science lessons.

Strategies such as nature's walks, field trips, and use of educational videos were not cited by any of the respondent teachers.

6.2.2. Availability and Use of TLMs in Lessons

Table 4 gives a breakdown of teachers' responses to the resources available in their schools for the teaching and learning of science. The data provided in Table 4 shows that most of the 9 schools had no models, nor charts.

Table 4: Resources available for teaching science at the various schools

Resources	Frequency	Percentage
Models	2	22.2
Charts	5	55.6
Reagents	3	33.3
Measuring instruments	2	22.2
Others	4	44.4

Three out of the 9 schools had sample reagents for teaching some science concepts. Essential equipment such as measuring instruments, electrical gadgets and equipment, were unavailable in all of the 9 schools. Notably ICT resources such as Laptops and projectors were unavailable in most schools.

Many teachers cited the absence of these requisite resources as the main reason accounting for the poor performance of pupils in science.

They generally advocated for the provision of TLMs as the main panacea to the problem of ineffective science teaching and learning at the Northern region directorate of education.

6.2.3. Feedback from Observation of Lessons

Teaching strategies applied during science lessons

During the observation of lessons, it came to light that the lecture method was the most predominant method of lesson delivery, followed by the question and answer mode of teaching. There was little or no use of science equipment during lesson delivery. Learners were generally motivated through clapping by colleagues and praises from the teacher.

Interaction among learners

Majority of teachers did not create the opportunity for sufficient interaction amongst learners. Only two teachers out of the 9 observed engaged learners in group activities.

Usage of Teaching and Learning Resources during lessons

Out of the total of 10 lessons observed, only 4 teachers employed the use of Teaching and Learning Resources. The predominant resources used were charts.

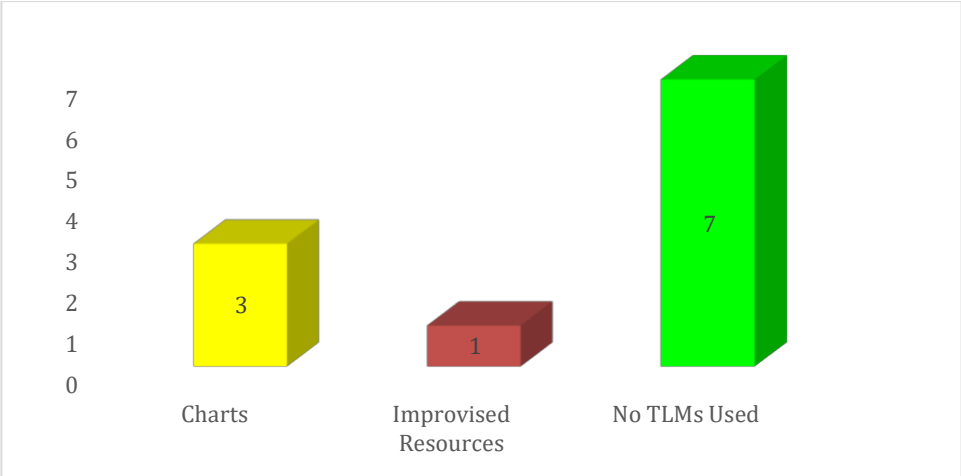

Figure 2: Breakdown of lessons observed and TLMS used

During a lesson on separation of mixtures, one teacher used an improvised thermometer to demonstrate the separation of a mixture of a liquid and an insoluble solid through the method of filtration. As evident in figure 2, no TLMs were used in 7 out of the 10 lessons observed.

6.2.4. Other Key Findings from Observation of Classroom Lessons

Lesson plan Development
Generally, lesson plans were well written, with provisions for assessment, active learner participation and use of TLMS well spelt-out.

Content delivery
Most teachers failed to follow the guidelines they had set out in their own lesson plans. The use of TLMS was minimal, whilst lessons were mostly teacher-centred. In half of the lessons observed, teachers showed limited understanding of the content being taught in class during the lesson presentations.

Classroom organization and management
Based on the problem of overcrowding, teachers did not rearrange the class during any of the lessons observed. However, teachers were able to manage disruptions and gain the attention of pupils throughout the lessons.

Improving instructional activities
Though provisions for reflective actions were spelt-out in the lesson plans, they were not adhered to in most of the lessons observed.

6.3. Summary of Learners' Views about their Science Teachers

6.3.1. Approaches used by teachers for teaching Science

Through the interactions with the focus groups, it came to light that the main approach used by science teachers was the lecture method. Another key technique used by science teachers was the question-and-answer technique. It was revealed that occasionally group-based strategies were used by science teachers. Approaches such as activity-based learning, demonstrations, use of videos and other ICT-based approaches were seldom used in science lesson delivery.

6.3.2. Students' views about the teaching strategies of science teachers

Most students were not pleased with the way and manner in which their science teachers taught the subject. According to the participants in the focus group, the teaching strategies used rendered it difficult for them to

understand the science concepts being studied. For this reason, many students were not interested in the study of science.

6.4. Improving the Teaching and Learning of Science at JHS

6.4.1. Teachers' views on how to Improve Science Teaching and Learning

During the interview sessions with the 9 respondent teachers, some recommendations were made to improve the teaching of science at the JHS level. Their suggestions are summarized in Table 6.

Table 6: Teachers' Views on how to Improve Science Teaching and Learning

Suggestion	Frequency
Provision of equipment	(9)
In-service training on learner-centred teaching and improvisation techniques in science	9
Setting up of ICT laboratories in schools	3
Building of science centres	1
Reduction in content of the science curriculum for JHS	1

It is evident from Table 6 that all the nine respondents suggested the provision of relevant equipment such as reagents, models, charts and apparatus to ensure effective science teaching. Additionally, all respondents felt the need to conduct in-service training sessions in order to update and equip JHS science teachers with the relevant skills in improvisation and learner-centred approaches to science learning.

6.4.2. Suggestions to Improve Learning

During the interview sessions, teachers made the following suggestions for consideration by stakeholders in a bid to improve the learning of science by JHS students:

- Provision of equipment to enable hands-on learning and activity-based learning
- More teachers should be recruited to teach science in the schools.
- GES must make a pass in integrated science a requirement for SHS placement
- Teachers must use different approaches (nature walks, visitations to STEM centres) to teach science in order to make the subject interesting to the learners.
- Provision of science textbooks to all students

6.4.3. Students' Suggestions for improving science teaching and learning

These were some of the approaches suggested by the focus groups for improving science lesson delivery by their teachers.

- Teachers should engage them (students) in practical activities
- Experiments must be conducted during science lessons
- They (students) would like teachers to involve them more during lessons
- Teachers must use science resources and equipment during science lessons

6.5. Discussion of Results

6.5.1. Teaching and Learning Methods used by teachers

The NPTECF (2019) stresses that learning within the Ghanaian school context hinges on social constructivism where the learner is prioritized in the daily teaching and learning process. In this vein, the teacher plays the role

of a facilitator who provides the environment necessary for students to construct their own knowledge (Borich, 2007; Boakye & Ampiah, 2017). Although teachers indicated that they used various learner-centred strategies, observation of lessons indicated otherwise. Science lessons were mostly conducted in the teacher-centered manner, a phenomenon which is similar to the findings of Bizimana and Orodho (2014) and Osei-Himah and Adu-Gyamfi (2022). Considering the practical nature of science, the failure of teachers to employ learner-centred approaches poses the risk of promoting misconceptions, poor attitude and general lack of interest in the subject by students. Additionally, students will not be able to acquire the key scientific process skills such as observing, analyzing, manipulating, evaluating and experimenting which are critical to their academic attainment in the subject (Haffar, 2016). The standards-based curriculum for science emphasizes on differentiation to suit the learning needs of different categories of learners. Teachers over reliance on the lecture method renders it difficult to address the learning challenges of learners with various learning challenges (Heather, 2020).

6.5.2. Status of Resource Availability and Adequacy

Bukoye (2019) outlines the role of instructional resources as the driving force behind any effective classroom learning. The use of resources makes science relevant and meaningful to students whilst also improving their attitude and conceptual understanding (Opara & Etukudo, 2014). Various studies reveal that generally schools in Ghana lack relevant resources for undertaking effective teaching and learning of science (Heather, 2020; Ampofo, 2020. For this reason, various researchers recommend that teachers resort to improvised equipment and resources for undertaking effective science teaching. In the current study, most schools lacked science laboratories or the requisite science equipment. This was exacerbated by the fact teachers lacked improvisational skills. Ampofo (2020) stressed on the abstract manner in which science is taught due to the absence of resources. The absence of improvised teaching and learning resources suggests that teachers lack the essential skills of improvising, which is similar to the findings by Davis & Chaiklin, (2015). The absence of regular in-service training and professional development sessions, is a possible cause of teachers' poor improvisation practices and skills. Stakeholders such as the head teachers, district and regional educational staff can also be faulted for the absence of the required science teaching and learning resources. The absence of textbooks for students is noteworthy, and should be a matter of concern to all stakeholders.

7. Conclusion

The study has been very insightful in bringing to fore some key factors affecting the learning of science at the JHS level within the country. The study provides a holistic view of the situation by gathering data from both classroom practitioners as well as learners. All categories of respondents acknowledged that the absence of relevant learning resources has a significant impact on the effective teaching and learning of the subject. The observation that most teachers use the lecture method in lesson delivery is worrying, since this approach of teaching does not promote the acquisition of relevant practical skills, which is the bedrock of science learning. It also inhibits the effective understanding of concepts by learners. Most definitely, it will result in learners developing a negative attitude towards the subject and discourage them from further pursuing science at the higher level. With regular in-service training coupled with the supply of relevant logistics, JHS science teachers will be well-positioned to effectively teach science leading to better learning outcomes.

8. Recommendations

- There must be regular in-service training on improvisation techniques in science teaching for all science teachers at the Junior High School level of the Ghana Education Service (GES).
- The GES and other concerned agencies and stakeholders must organize training sessions for science teachers on learner-centered approaches to teaching. This must focus on the effective application of various teaching techniques such as the activity method, discussions, role play, think pair share, group work in lesson delivery.
- In this era of modernization, the capacity of teachers must be enhanced in order to enable them make full use of ICT and internet resources in lesson planning, teaching and assessment of learners.
- Training of teachers on how to effectively teach **perceived difficult topics** conveniently.

- Through the help of the regional STMIE coordinators, a network of science coordinators and teachers must be formed to enable science teachers share ideas and experiences towards improvement in their classroom delivery.
- Science is a practical and activity-based subject. For this reason, resources such as charts, models, reagents, basic laboratory equipment must be supplied to all the Junior High schools in the northern region to help ensure effective science teaching and Learning.
- Students must be supplied with relevant science textbooks to help them undertake independent and further study of the subject after school. This will help to boost their conceptual understanding of key science concepts.

9. Limitations

Some of the teachers had worked for a relatively short time, which implies they might not be very familiar with all the resources available within the school for teaching science. Some respondent science teachers also did not have a science background, and this might have had an influence on the responses they provided, such as the suggestions and recommendations for improving science learning at the JHS level.

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Private Educational Institutions in Future Community Education Scenarios

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Abstract
In 2019, the Zhejiang Provincial Government issued the "Zhejiang Comprehensive Launch of Future Community Construction Pilot" and explained the concept of future communities, which follows the value orientation of humanization, ecologicalization, and digitization. Aimed achieve harmonious community governance, green intensification, and intelligent sharing, Government, community, social organizations, education institutions, and residents jointly build a new integrated community system for a better life with nine key innovative scenarios, including education scenarios. Stakeholders devote themselves to creating a new urban functional unit with a sense of belonging, comfort living, and future vision (Yue, 2019, March 31; Lv, 2023). Chinese dialogue advocating education scenarios in future communities is not a single or separate mission. This vast project is based on current achievements of building a lifelong learning city, setting inclusive and universally beneficial preschool education system, 15-minute ride living facilities, 5G, AI, and innovative platforms, all recent focus （Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020). What would the future community education scenarios be like? Chinese scholars refer to public participation, classification management of private education institutions, living environment construction, modernization of community governance, textual hermeneutics, collaborative governance, new urbanism, new public service theory (Lv, 2022), learning theory, Modernization of Education in China, and lifelong learning theory. Schools, families, governments, institutions, and communities would closely unite and collaborate to provide education services, achieving a panoramic, entire life cycle and imaginative education scenario that everyone, everywhere, and every time, can learn. Private educational institutions are essential participating forces, practical actors, and innovative pioneers in realizing future community education scenarios.

Keywords: Future Community Education, Scenarios, Private Education Institutions, Future Community, Zhejiang Province, China

1. Introduction

1.1 Future Community Education Scenarios

Is it possible to plan a future community? （Johnson,1997）. The future is never an isolated concept, a utopian imagination detached from reality, or a paranoid orientation with a strong technological focus and a lack of humanistic care. The future community concept's innate mission is to incorporate communities, residents, organizations, and local infrastructures into a broader context to achieve sustainable development. The future community is not a limited vision, but an open thinking, an exploration and reflection on urbanization (Urban China & Cui, 2021). Future community intertwines with the global concept of urban renewal, but it is not limited to defining the best sample, as each has its advantages. Characteristic future communities include Chinese style 15-minute living circle community, Japanese cypress leaf smart community, Singapore urban iterative composite new community, Dutch youth autonomous community, Future community office sharing space, and Canada's smart community that focuses on the health and well-being of urban residents. However, they are not limited to these (Urban China & Cui, 2021).

1.2 The functions of private educational institutions

The Regulations of the Law of the People's Republic of China on the Promotion of Private Education（《中华人民共和国民办教育促进法实施条例》）explicitly stipulates in Article 3 of Chapter 1 of the General Provisions that governments at all levels shall support and regulate social forces in organizing private education by the law, ensure that private schools operate and manage independently by the law, encourage and guide private schools to improve quality, develop characteristics, and meet diverse educational needs. Compared to public education institutions, private education institutions refer to institutions that use non-state fiscal funds to organize schools and other educational activities for society. (The State Council of the People's Republic of China, 2021, April 7) According to the 2022 National Education Development Statistical Bulletin（《2022 年中国教育事业发展统计公报》）, there are a total of 178300 private schools at all levels and types in China, accounting for 34.37% of the total number of schools at all levels and types in the country. There are 52.827 million students enrolled, accounting for 18.05% year-on-year (Ministry of Education of the People's Republic of China,2023, July 5). After the reform and opening, private education institutions have experienced more than 40 years of development, occupying a place in academic education and becoming the main force of non-academic education. According to The Implementation Regulations of the Law of the People's Republic of China on the Promotion of Private Education, private education has risen from a supplement to public education. It has become an important component of socialist education. In the setting of future community education scenarios, private education institutions are innovators of educational concepts, providers of educational services, expanders of educational resources, optimizers of educational ecology, creators of lifelong learning environments, practitioner of public participation and collaboration theory, promoters of modern educational governance, operators of accurate educational evaluation, demonstrators of new urbanization, and solvers of the supply-demand contradiction of community education resources.

In the new era, Zhejiang Province has proposed vigorously promoting the two pioneers（两个先行） of shared prosperity and provincial modernization in high-quality development. Future community construction is committed to funding future education as one of the nine scenarios. The community is set as an urban development unit and a micro demonstration zone for shared prosperity. The Implementation Plan for High-Quality Development and Construction of a Demonstration Zone for Common Prosperity in Zhejiang Province (2021-2025)（《浙江省高质量发展建设共同富裕示范区实施方案（2021-2025 年）》） focuses on building a modern unit for prosperity sharing, focusing both on future urban communities and new rural communities. New requirements are proposed for future community education scenarios (Liu & Shi, 2019; Yang & Wu, 2020; Rao, 2022).

1.3 High-quality development of private educational institutions

The concept of "high-quality development of private education institutions" is comprehensive. Especially the word "high-quality" has become a high-frequency vocabulary in policies, outlines, plans, and opinions. In recent years, there have been various arguments on the definition, implementation path, evaluation system, and implementation path of high-quality development of private education, hardly to summarize. Furtherly, continuous attention to private education development was interpreted in the 20th National Congress of the Communist Party of China report (The State Council of the People's Republic of China, 2022, October 25).

2. Literature Review

2.1 Discussion of Future Community

In 2011, Todd L. Goodsell, Matthew Colling, Ralph B. Brown, and J Lynn England (2011, December) co-authored "On Past and Future of Community: A Pragmatic Analysis," which argues that Charles Sanders Peirce proposed a semiotic approach to examine the society within a "community," thereby directing external attention towards those who provide explanations. Jenny Pickerill et al (2023, September26) sought possible and feasible alternatives to the dominant neoliberal development model, proposing the development of eco-communities in green cities to address environmental degradation and various development crises. Beyond the strategies of neoliberalism and technological urbanization, re-examining the benign relationship between social development and ecological environment and building sustainable and socially equitable urban communities in ecological transformation. Lilac community in the UK, Spreefeld community in Germany, Andelssam fund I Hjortsh ø j community in Denmark, Kailash Eco Village in Los Angeles Eco Village in Los Angeles Eco Village, Peninsula Park Commons in the US, and Wohnprojekt Wien community in Austria are among the best (Dunn, Boyko & Pollastri, 2019).

In 2020, the United Nations Human Settlements Programme (UN-Habitat), together with the United Nations Environment Programme, the New Economic Structure Institute of Peking University, Tsinghua University, UK Research and Innovation, released the "Future Cities: New Economy And Shared City Property Driven By New Economy And Technological Innovations - Discussion Papers"（科技创新驱动未来城市：新经济与共享城市繁荣）, focusing on 4 aspects: a. Tradition to Modernity: Technological Transformation for Cities, b. Digital Twin Cities and Advancing Urban Infrastructure, c. Advances in Application Scripts, d. Urban commerce and sustainable finance (Keith, et al. ,2020) .

The World Cities Report 2022: Envisaging the Future of Cities confirms that after the COVID-19 pandemic, "health", "education", "economy", "technology," and "productivity" are listed as keywords as always to cultivate resilient, inclusive, sustainable, fair and greener future urban communities (United Nations Human Settlements Programme,2022).

Paul Grogan, President and CEO of The Boston Foundation, once looked forward to the future of community development at the "Open Forum: Voices and Opinions from Leaders in Policy, the Field, and Academia," stating the urgent need to develop effective methods to promote human development (Urban China & Cui, 2021).

The OECD report "Future of Education and Skills 2030 Conceptual Learning Framework Transformative Competencies For 2030" emphasizes encouraging students to participate in volunteer activities, service learning, and problem-solving practices in communities and cultivates transformative capabilities in schools, families, and communities（Taguma, Feron & Lim, 2019).

Nick Dunn, Christopher Boyko, and Serena Pollastri (2019) examined the future communities and values in 2050 based on three levels: "possible trends," "possible futures," and "possible outcomes." The authors evaluated the current emerging community models, particularly the trend towards more personalized transformation, the use of digital technology to promote or inhibit broader social participation, exacerbating social-spatial inequality, and strategies to enhance empowerment.

2.2 Chinese dialogue of education scenarios in future community

What would the future community education scenarios be like? Chinese scholars refer to public participation, classification management of private education institutions, living environment construction, modernization of community governance, textual hermeneutics, collaborative governance, new urbanism, new public service theory (Lv, 2022), learning theory, Chinese education modernization, and lifelong learning theory. Schools, families, governments, institutions, and communities would closely unite and collaborate to provide education services, achieving a panoramic, entire life cycle and imaginative education scenario that everyone can learn anywhere, at any time. Private educational institutions are essential participators, practitioner, and pioneers in realizing future community education scenarios.

2.3 Research Focus

This study analyzes the needs of future community education as a starting point, responding to the value orientation of "humanization", "ecology," and "digitalization". Undoubtedly, scenario education has attracted private educational institutions to participate and empower the renewal of community education concepts. As a major community education provider, adding private education institutions and emerging technologies such as big data will significantly update community education resources and elements. Under strong policy guidance, social capital and social forces will focus on creating smart learning spaces and activating diverse stakeholders to participate in change. As multiple entities are involved, private educational institutions are bound to enhance community education's modern governance capacity and promote precise evaluation implementation. In the future community education scenario, private education institutions can play at least four functions: multiple providers and resource coordinators of community education services, pioneers of modern governance of community education, innovators of community education concepts and educational ecology, and optimizers of community education ecology (see Figure 1).

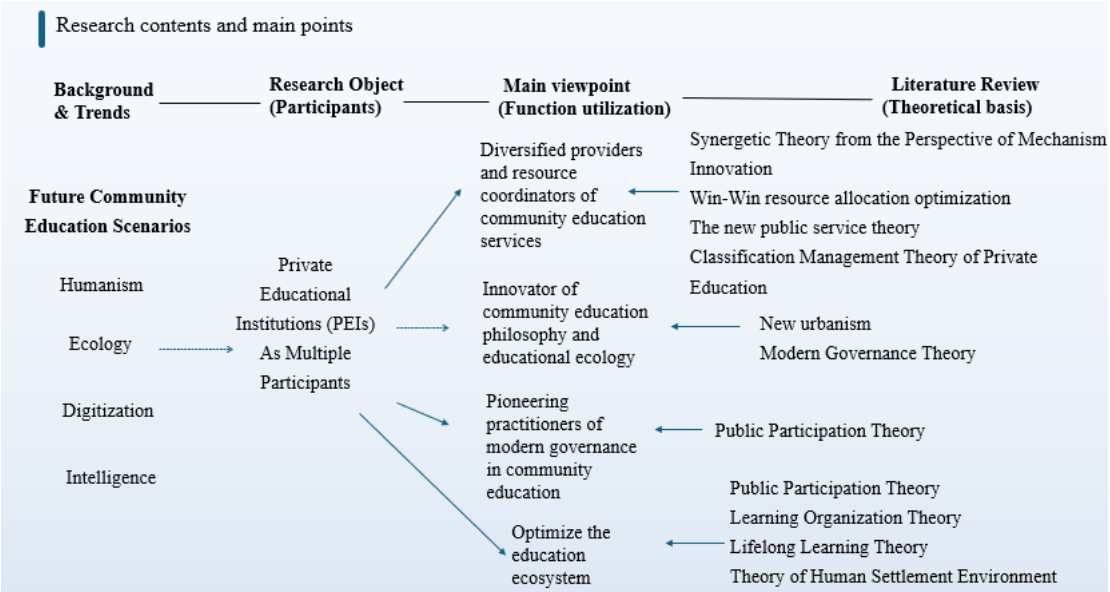

Figure 1. Research contents and main points

3. Research design

3.1 Research hypothesis

Research hypothesis: Private educational institutions are important participants, builders, and practitioners of future community education. Multi-type and multi-level private education institutions are indispensable participants and innovators in the high-quality development of future community education. They are the guaranteed force for improving the quality and increment of future smart community education services and the driving force for achieving lifelong ubiquitous learning throughout the entire life cycle. Therefore, exploring how

to leverage the multiple functions of private education institutions with clear value demands has profound significance.

Validate hypothesis: If the hypothesis makes sense, how can it be more effective?
Response: What roles do private educational institutions play? How would private educational institutions

Research Logic: Background→Preliminary research→Logical route→Research Findings (Figure 2)

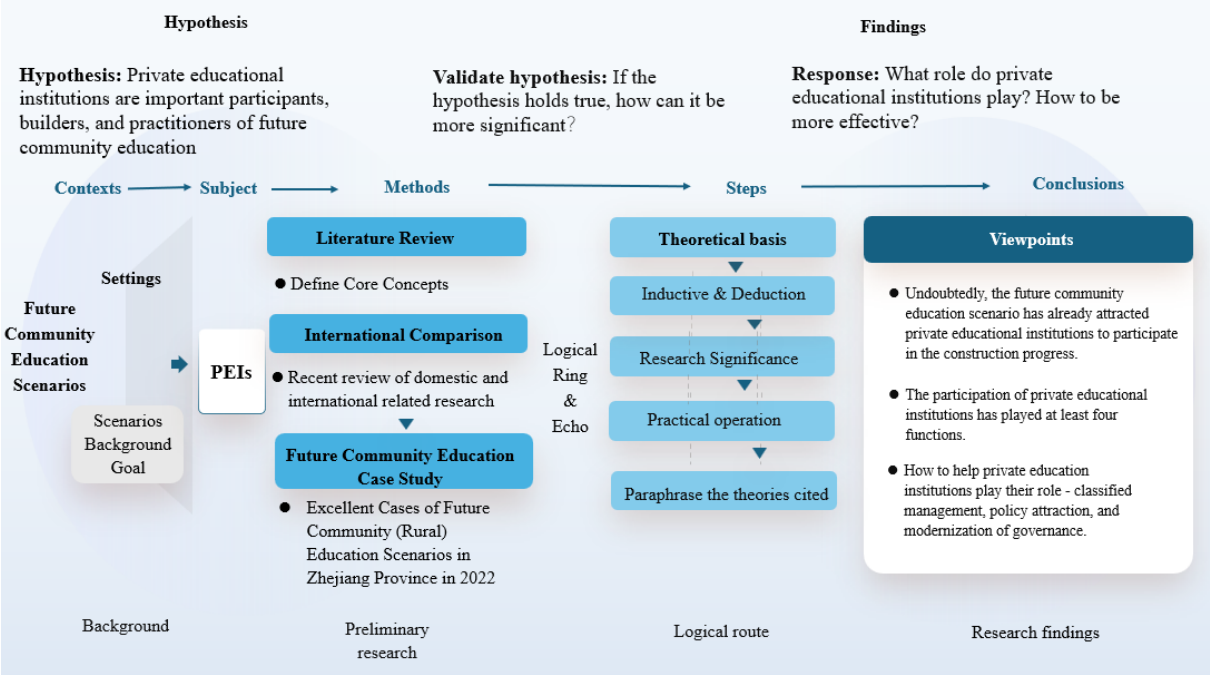

Figure 2. Research design

3.2 Definition of Concept

Future Community Education Scenarios in the Chinese context focus on a. mission/goal achievement, b. background fitting, and c. scenario setting. Expectations of private educational institutions are implanted in those contexts while discussed. The preliminary research sorts out a literature review, comparing definitions of core concepts and related international comparative studies. This research sets on future community education cases, and the selection database is based on the excellent instances of future community (rural) education scenarios in Zhejiang Province in 2022.

3.3 Research progress

Research progress follows step by step as: Contexts→ Subject→Method→Steps→Conclusions. Close logical loop and highlight coherence between points, findings, and solutions.

Discuss future education scenarios and respond to the value of "humanization", "ecology", "smart", and "digitalization" achieved in future education scenarios. Future education scenarios welcome private education institutions to participate as major providers of education products. Emerging technologies such as big data and AI have extensively updated community education resources. Social capital is permitted by national laws and regulations to be involved in the recombination and innovation of education in future communities, such as adding shared learning spaces and activating multiple subjects to participate in the transformation, introducing modern government theories (performance focus, humanistic concern, differentiated competition, classification management, amplification advantage effect, product upgrade, service improvement, agglomeration effect of advantageous resources, introduction to modern governance theory, and optimizing community education ecology).

Based on previous literature research, this article supports that future community education scenarios have already attracted private education institutions to participate in construction, focusing on how to attract private education institutions to participate in future community education development.

What functional roles are private education institutions expected to play, and how can they leverage the multiple roles of private education? Whether certain sub-scenes of future community education scenarios can be drawn through many case studies, true knowledge comes from practice. The attention to private educational institutions will also be tested, discussed, and upgraded through these real-life examples.

Whether certain sub-scenes of future community education scenarios can be drawn through many case studies, proper knowledge comes from practice. Private educational institutions' functions would be examed, discussed, and upgraded through these real cases.

4. Findings

In future communities established by the government and managed by private educational institutions, there will be mandatory nursery centers for children under three. These centers will offer not only traditional nursery school and kindergarten education services but also newly introduced full-time, part-time, holiday, and nighttime daycare options. The staff at these centers must hold professional childcare certifications. The community's innovative platform will maintain a database of retired teachers, retired child protection personnel, full-time parents, and professional social workers who can serve as part-time assistants. Comprehensive security monitoring, with no blind spots, will cover all childcare facilities. Community platforms will allow parents to monitor their children's conditions through smart terminals after completing identity authentication, enhancing parental peace of mind (the Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020). Based on the estimated number of students applying for admission, kindergartens will be rebuilt or expanded. Branches of top kindergartens will be established, and video security monitoring systems will be installed to facilitate remote class observations by guardians and researchers. Principals and teachers will share meals with the children and sit beside them during dining sessions, fostering a nurturing and inclusive environment (the Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020).

4.1 Pluralistic collaboration among educational entities

Future community education no longer follows the traditional single mode dominated by the government and public institutions. Instead, it will transform into a multi-subject mode and engage governments' governance, enterprises' collaboration, social organizations' joint (private schools are contained), and community residents' participation. Multi-subject collaborative governance integrates resources through diversified channels (Lu, 2020).

Private educational institutions can participate in community education projects to supplement public services. Besides learning resources and knowledge services and mentor assignments, Private educational institutions are expected to make more efforts in areas such as Community education service, adult education and training, cultural and recreational activities, partnerships with Non-Profit Organizations, 0-6 year-old kids' care and nursey, k-12 extracurricular activities, after-school programs, mentorship programs, camps, study tours, so as disaster response and relief (the Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020).

4.2 Equitable and inclusive education service supply

Composite the design for future educational space (Rao, 2022), private education institutions collaborate to integrate resources that would benefit a more equitable and inclusive education supply. Online and offline learning platforms enable education services open to all age resident groups, covering childcare, youth quality development, adult vocational training, and elderly entertainment, meeting the lifelong learning needs of the entire population.

4.3 Digitalization empowers community governance and education evaluation

Recent tech advancements, like big data and AI, have transformed community education into a modern governance model. Visual data helps monitor interactions among entities and offers real-time responses and precise evaluations. IT has introduced intelligent management models (Rao, 2022).
Humanistic tech upgrades focus on equity, diversity, and inclusivity, aiming for sustainable community education (Lu, 2020). Multi-subject collaboration integrates resources and fosters a co-construction, co-governance paradigm supported by government, NGOs, industries, and residents (Rao, 2022).

Advanced tech, individual initiative, and collective consensus drive this change. Private institutions contribute by developing smart education platforms, evaluating sessions, analyzing learning behaviors, and accelerating digital transformation (Bao, 2020).

4.4 Future Community Education Industry

Educational resources are open to the future community as private educational institutions are encouraged to share resources at a lower cost for individuals and provide paid knowledge services. At the same time, recent community facilities and resources are open to the education industry, such as community college welcome course registering. Responding to a green knowledge recycling trend, industry mentors' efforts release intra training resources to the community. A sound knowledge circulation system achieves resource reuse. Adhere to the idea of openness, cooperation, sharing, and win-win (Rao, 2022), the future community education industry aims to integrate various resources, collaborate with private education institutions and social organizations, and establish a cross-department, cross-regional, cross-industry, and cross-platform integrated operation model which take responsibility for industry investment, construction, management, and operation (Wu, 2023).

4.5 Logic for the modular curriculum system construction

Support private education institutions (PEIs) in creating diversified educational scenes and conducting inclusive education through multiple cooperation. Future community education scenarios challenge the current lifelong learning curriculum paradigm. Curriculum design is required to break traditional courses' fixed structure, establish a hierarchical core, and maintain the ability to adjust dynamically. Respect private institutions' intellectual property protection and operational sustainability (Xu, 2021). Private education institutions should work with communities, honored schools, libraries, stadiums and venues, youth palaces, etc., and deliver high-quality courses through smart classes. The online system monitors residents' learning needs and links to learning resources such as primary and secondary online course platforms, vocational qualifications and skills training databases, and community college online platforms. Individual's various learning needs call for a flexible combination of micro courses, phased contents, and unit packages. Users can customize personalized learning lists and select courses freely. Courses cover early childhood care and education, vocational qualification, primary and secondary discipline, elderly education, continuing education, culture, entertainment and finance. Realize mutual recognition of credits through credit banks (Jiang, 2020). Private education institutions can access the learning points system through the community wisdom platform and link their courses with the points exchange mechanism (such as receiving cultural performance tickets or facility rental subsidies as praise for credits). Encourage blockchain technology to fully confirm intellectual assets, token incentives, etc., and enhance private education institutions' intellectual property protection and operation sustainability (Xu, 2021).

4.6 The humanistic revival in the technology-driven field

The core goal of building future communities is to enhance residents' quality of life through cooperation, leveraging technology. Personalized learning is emphasized (Wang, 2022; Zhou, 2022), with smart platforms offering diverse resources and vocational training to help residents switch careers. Regular cultural activities and lectures enrich community life. Design focuses on comfort, learning, travel, and essential services. The community organizes events, fosters online connections, and meets regularly to encourage social interaction, self-realization, autonomy, and mutual aid (Lv & Jin, 2021). Residents engage in collective activities, building a sense of belonging and valuing individuality, civic consciousness, and public morality (Lv & Jin, 2021; Nie &Zhang, 2021; Wang,

2022; Zhou, 2022; Yang, 2023). Balancing individual and collective actions, technology aims to better residents' lives.

4.7 Potential advantages of future community education

The explicit characteristics of future community education include the diversity of educational subjects, fairness in educational supply, wisdom in educational services, and comfort in learning experience (Bao, 2020), while potential advantages include optimizing the configuration of basic education infrastructure (Sun, 2022). Provide vocational skills training scenariosto enhance talent skills through the integration of industry and academia; Upgrading the industrial education service system drives industrial iteration. Promote the composite design of educational spaces and cultural scenes for all age groups (Feng &Yuan, 2023). Respect the values centered on people, drive the upgrading of the education industry with technology, deeply integrate fairness, diversity, and digitization, and achieve sustainable development of community education (Rao, 2022). Establish the concept of lifelong learning, low-carbon living, and green environmental protection (Zheng &Yu, 2023); Building a harmonious community.

5. Discussion

Future communities are constructed based on the traditional concept of gathering resources and accomplishing a better living. This kind of governance guarantees private education institutions participate in future community education scenarios construction, which is also the Chinese dialogue of education scenarios in future community advocates (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020):

Govern Models: Governments, management departments, social agencies, and pertinent public institutions have fostered long-standing and close cooperation. This governance framework ensures that private educational institutions are actively involved in shaping the education scenarios of future communities.

Unified Approach: Adopting a cohesive strategy minimizes communication barriers among administrative departments, preventing disconnects between various industries and fields.

Professional Autonomy: While the Chinese government respects the relative independence of professional domains, it relies on current close and unified teamwork when tackling details.

5.1 *Achieving Universal Coverage of Nursery Care for Children Under 3 Years Old*

To ensure comprehensive care for infants under the age of three, the following measures will be implemented (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020), including allocation of high-quality childcare facilities, expansion of inclusive childcare services and models, development of the iCloud Nursery and Supervision Platform, releasing high-quality educational resources and programs, as well as establishing quality assurance mechanisms.

5.2 *Honored teachers and outstanding schools nearby –Adolescent Education Platform*

Develop an integrated 3-15 years education platform, combining online & offline resources. Partner with top teachers & schools, attracting institutions to share high-quality content. Integrate extracurricular services and ensure fair admission. Renowned teachers will offer interactive online courses. Strengthen community education support and set 16:30 classrooms after school. Explore learning assessment & remediation. Connect with Zhijianghui Education Square, deploy 5G+VR classrooms, and use learner data for tailored video delivery (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020).

5.3 Shared learning platform-- Everyone could be a mentor

Establish a community-wide mentoring and knowledge-sharing mechanism. Enable every community member to serve as either a learner or a mentor, fostering a culture of continuous growth and mutual support (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020).

5.3 Future education scenarios for lifelong learning

Collaborate with education institutions to assign instructors based on residents' needs, offering trial teaching rewards and free study incentives. Future communities verify smart learning spaces using social capital, public welfare orgs, and resident mutual aid teams. Governments fund projects annually. Future communities offer education and working chances for all residents.

Within future community hubs, establish bookstores, libraries, study rooms, children's reading areas, shared book bars, cafes, salons, reception rooms, and meeting spaces (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020). Lifelong learning is a conscious demand and self-disciplined behavior, driving personal growth. Create a collective environment and mobilize individual initiative (Huang, 2020).

5.6 Consider Children's life experience

Promote children's engagement in the community and encourage private educational institutions to establish well-being classrooms. Qualified social workers and volunteers can provide for after-school tutoring and care for teenager students. Public welfare organizations may set up children's sites and consider their interests (Pilot Work Plan for Future Community Construction in Zhejiang Province, 2020).

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Students' Local Cultural Identity and Its Assessment in Public and Islamic Junior High Schools

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Abstract
Considering local cultural identity is essential for school counselors who provide counseling services to junior high schools. For this purpose, counselors should use a valid and reliable instrument to measure such identity. This study aimed to design and validate the Local Cultural Identity Scale (LCIS) to support counseling services. By applying development research procedures, the study involved five school counselors who served as an expert panel in judging item content validity, followed by 20 and 685 junior high school students who gave responses for readability and construct validity. Various methods were used for data analysis, including the Content Validity Index (CVI) to assess content validity, Cronbach's alpha to test reliability, the item-item and item-total correlations, and Exploratory Factor Analysis (EFA) to evaluate construct validity. The initial item development process proposed 30 items across three dimensions. After evaluation by the expert panel, only 20 items met the criteria for content validation. A readability test was conducted with 20 respondents during the scale development stage, showing that these 20 items had good readability. The EFA revealed three factors for the LCIS: cultural pride, cultural knowledge, and ethnic group loyalty. The finalized version of the LCIS consists of 20 items. The study recommends that school counselors use the LCIS as an intentional tool to assess students' local cultural identities, ensuring that counseling meets individual needs.

Keywords: Local Cultural Identity, Junior High School, School Counseling, Assessment Scale

1. Introduction

As Indonesia develops its national culture, it preserves local cultures, which are necessary for the uniqueness of each ethnicity and region. For this acknowledgment, Indonesians can practice and express local cultures, promoting a strong sense of local cultural identity (Sujinah et al., 2020). For example, in South Sumatra, one of many provinces in Indonesia, various ethnic groups coexist (Ananta et al., 2014; Khairunisa, 2024). Young people of these groups bring their local culture to the schools to build a multicultural community. Since culture can explain relation between people and environment, for educational purposes school counselors, joining with other school personnel, are expected to understand students' local cultural identities to provide better educational services that support their development.

In Junior high school, students are in a critical developmental stage where they explore their identities (Verhoeven et al., 2019). Culture or local culture, along with other human dimensions, build their self-identity. Referring to Groen et al. (2019), it can be defined as identity continually and intentionally shaped by group norms and values, guiding individual perceptions, moral judgments, and behaviors within a shared cultural framework. In this way, local cultures play a strategic role in developing young people characters (Herlina et al., 2024), self-concept (Marshall, 2001), self-esteem (Cai et al., 2007), emotional well-being (Murrup-Stewart & Truong, 2020), and learning (Hanushek et al., 2020) that form their identity.

School counselors who understand or appreciate students' cultural backgrounds can encourage students to explore their culture to build self-identity. However, as school communities become increasingly diverse, students may experience more challenges in retaining their cultural identity with external influences. Several studies (Dharma et al., 2021; Manurung et al., 2022) found a decreasing cultural identity among the young generation that alienates them from their cultural origins. For this situation, the literature highlighted that a lack of connection to cultural origins could cause mental health problems (Davidov & Yastremski, 2023; Gopalkrishnan, 2018). To respond to these issues, school counselors, as advocates for student development (Myrick, 2011), require tools to assess their local cultural identity before addressing counseling intervention.

A demand for multicultural counseling, school counselors should consider students' local cultural identity, especially in helping students who may benefit from using cultural values to address their problems, such as interpersonal conflicts (Safdar et al., 2020), bullying (Martínez-Santiago et al., 2023; Siming et al., 2015), and intolerance (Sariyatun & Marpelina, 2023). A valid and reliable instrument for measuring local cultural identity suggests counselors a structured problem formulation in large-group guidance sessions, group counseling, and individual interventions. Furthermore, such tools can help counselors collaborate with teachers and parents to promote local cultural values to students in the learning process and neighborhood relationships.

In Indonesia context, local cultural identity plays a crucial role in school counseling. Its assessment, along with other personality qualities, will assist school counselors in understanding their counselees. Yet, there is currently a lack of standardized general tools designed to assess it among junior high school students. Historically, several instruments existed in professional journals for this purpose. They were the Youth's Ethnic and National Identity (Leszczensky & Santiago, 2015), The Multicultural Identity Integration Scale (Yampolsky et al., 2016), the Multiethnic Adolescent Cultural Identity Questionnaire (Hu et al., 2014), and the Cultural Identity Questionnaire for Asians (Bhugra et al., 2009). However, they may have some limitations if used in other areas or purposes. As a result, school counselors may use inappropriate instruments that can hinder the effectiveness of their counseling strategies. Consequently, some adolescents might remain unsupported in achieving their developmental tasks when school counselors omit their cultural backgrounds. Without using validated instruments, the school counselor would fail to recognize the indecisive cultural identity of students, potentially leading to disturbing identity formation (Newark, 2014). This study overcame that limitation by aiming to develop a Local Cultural Identity Scale (LCIS) that adhered to validity and reliability standards of measurement.

2. Methodology

2.1. Procedures

This development research followed procedures suggested by Boateng et al. (2018), Hinkin (1995), and Niangchaem et al. (2024). The procedures were item development, scale development, and scale evaluation stages. The first stage involved identifying the domain, generating items, and validating item content. It started with a literature review to select which domains were representative of the scale and write items based on its constructs. Meanwhile, a panel of five experts examined the content validation of the scale based on their expertise (Cohen & Swerdlik, 2017). In the second stage, the scale was administered to a limited group of respondents to examine its readability. Finally, in the final stage, the scale was administered to a large group of students to ensure its validity and reliability. In this stage, the study used the statistical procedures of exploration factor analysis (EFA) (Tavakol & Wetzel, 2020) to examine the scale construct validity.

2.2. Respondents

This study involved junior high school counselors and junior high school students in Grades 8 and 9, aged 14 to 15 years of three selected public junior high schools (PJHS) in Palembang City, as well as two public Islamic junior high schools (PIJHS), commonly known as Madrasah Tsanawiyah in Lahat city, South Sumatera Province, Indonesia. The participant assignment followed the LCIS development stages. During the item development phase, five experienced junior high school counselors, each possessing over a decade of expertise, provided meaningful insights by reviewing the content validation. In the scale development stage, 20 selected students participated in the readability trial of the scale items. After thorough analysis and necessary item revision of the previous stages, the LCIS had 685 students participating in administering the final version of the LCIS. Table 1 provides the demographic data of school counselors and students in each stage.

Table 1: Demographic Data of Respondents

Stage	**Respondents**	**Gender**				**N**
		Male		**Female**		
Item development	5 School Counselors	1		4		5
Scale development	PJHS Students	8		12		20
	Grade	8^{th}	9^{th}	8^{th}	9^{th}	
Scale evaluation	PJHS Students	87	90	112	118	407
	IJHS Students	58	63	77	80	278

2.3. Instruments

The study utilized three instruments in the development of the LCIS: the Item Content Validation Sheet (I-CVS), the Item Readability Questionnaire (IRQ), and the Local Cultural Identity Scale (LCIS). The I-CVS consisted of 30 items designed to assess the relevance of each item to its domain and indicator. School counselors rated each item on a four-point scale: Strongly Relevant (4), Relevant (3), Not Relevant (2), and Strongly Not Relevant (1). The IRQ included 20 items aimed at evaluating item readability. students rated each item using a five-point Likert scale: Strongly Understand (5), Understand (4), Moderately Understand (3), Slightly Understand (2), and Not Understand (1). Finally, the LCIS comprised 20 items designed to assess construct validity. Students rated their agreement with each item on a five-point Likert scale: Strongly Agree (5), Agree (4), No Opinion (3), Disagree (2), and Strongly Disagree (1).

2.4. Data Analysis

The study analyzed the data collected during the three stages of LCIS development. First, in the item development stage, the study examined each item to determine its content validity by utilizing I-CVI's formula. According to Lynn (1986) and Pollit et al.(2006), an acceptable I-CVI should align with the number of experts involved. For groups of five or fewer experts, an I-CVI of 1.00 was required for each item, indicating unanimous agreement among experts regarding the validity of an item's content. Considering this criterion, each item was deemed valid for the domain retained in the scale. Next, in the scale development stage, the scale readability was examined to identify misunderstanding and measurement errors. An item was adequately readable if it achieved a readability mean score among assigned respondents as follows: Strongly Understand (80-100), Understand (66-79), Moderately Understand (55-65), Slightly Understand (41-45), and Not Understand (0-40) (Lutfiyah & Supardi, 2019). Items that received scores below the Moderately Understand category were excluded from the scale. Finally, several statistical procedures were implemented to evaluate the scale. They comprised inter-item and item-total correlation analyses, Cronbach's alpha analysis for reliability assessment, and exploratory factor analysis (EFA). All data analyses were calculated using IBM SPSS 25.0.

3. Results and Discussion

3.1. Item Development

This study started with defining the domains necessary for the LCIS. Considering investigations conducted by Phinney (1992) and Lee and Yoo (2016), the study identified three essential domains: cognitive, affective, and behavioral for the LCIS. Following domain identification, 20 items for each domain were written and included in the scale. However, upon thorough analysis, 30 items were identified for exclusion because of excessive redundancy, leaving a refined initial set of 10 items for each domain. Each item had a code given according to its dimension. C is for cognitive, A for affective, and B for behavior. Subsequently, content validity was employed to determine the item content Validity Index (I-CVI). Five school counselors who had extensive experience in school counseling reviewed the LCIS. They reviewed each item to confirm its relevance to the defined domains. Table 2 details the evaluation results.

Table 2: Specification of LCIS from the Original Form to Final Form.

Domain	Initial form	Final form
Cognitive (C)	10	7
Affective (A)	10	6
Behavior (B)	10	7

As discussed in the data analysis section, an acceptable I-CVI was contingent upon the number of experts involved. For groups of five or fewer experts, the I-CVI must be 1.00, indicating unanimous agreement that an item is content valid. Ten items (C3, C9, C10; A3, A4, A8, A10; B2, B5, B8) were considered irrelevant to their respective domains. These items subsequently were excluded from the scale. Ultimately, only 20 items met the criteria for subsequent stages.

3.2. Scale Development

In developing the scale, items were administered to a small group of students to reduce misunderstandings and potential measurement errors. This stage helped identify poorly worded items and allowed for revisions to ensure readability, ultimately reducing the cognitive burden on respondents. Twenty students participated in testing the LCIS's readability. After analyzing its results, 20 proposed items were understandable by them in the range between 0.67 - 0.80, indicating they had good readability. To this result, the scale moved into the next step of scale evaluation.

3.3. Scale Evaluation

(1) Inter-item and item-total correlations.

The construct of the LCIS was validated using Exploratory Factor Analysis (EFA) with a sample of 685 junior high school students. Before conducting EFA, inter-item and item-total correlation analyses were performed to assess the quality of the items. The results showed that all 20 items had acceptable item-total correlation values, with significant correlations at the .01 level (2-tailed). The correlations ranged from 0.447 to 0.776. These findings indicated that all items were suitable for further analysis using EFA.

(2) Results of Exploration Factor Analysis (EFA)

(a) KMO and Bartlett's Test

The first result of EFA to LCIS, displayed in Table 3, provided information on the value of The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy **of** 0.961. As a rule of thumb, values above 0.7 were considered commendable. Since the value of LCIS surfaced at an acceptable value of 0.70 and even was close to 1.0, it suggested excellent sampling adequacy. This value indicated that the sample size was highly suitable for factor analysis. Meanwhile, Bartlett's Test of Sphericity results showed a significant Chi-Square discount **(χ^2 =7455.953, *df* = 190, p < 0.000),** suggesting that the correlations among items were sufficiently strong to justify factor

breakdown. Both high KMO value and significant Bartlett's test demonstrate that the LCIS had a robust data structure and credibility in assessing local cultural identity.

Table 3: The Results of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.961
Bartlett's Test of Sphericity	Approx. Chi-Square	7455.953
df	*df*	190
	Sig.	.000

(b) Communalities

The second result of EFA provided item commonalities. In their review, Taherdoost et al. (2016) stated that the lowest value extraction should be 0.50-0.60 for samples larger than 500. After the first run, among 20 items, all had extraction values of >0.50, as displayed in Table 5. The "Extraction" column shows the proportion of variance in each item that is explained by the factor structure. Items with higher values indicate stronger contributions. Items such as **B4 (0.708)** demonstrate high communalities, suggesting this item is well-aligned with the latent construct of local cultural identity. Items like **B9 (0.582)**, while lower, still exceed common thresholds (e.g., 0.5), indicating acceptable levels of shared variance.

(c) Eigenvalue

As summarized in Table 5, the Exploratory Factor Analysis (EFA) for the initial eigenvalues indicated Component 1 had an eigenvalue of 9.531, explaining 47.653% of the total variance. Component 2 contributed an additional 7.519%, raising the cumulative variance to 55.172%. In addition, Component 3 added another 5.104%, bringing the cumulative explained variance to 60.276%. Meanwhile, Components 4 through 20 have eigenvalues below 1, indicating that they explain less variance than a single variable and are unlikely to represent meaningful factors. According to Kaiser's Criterion (eigenvalues > 1), only the first three components meet this threshold, suggesting that a three-factor solution is appropriate. The data supports a three-factor model based on eigenvalues > 1 and the amount of variance explained.

(d) Rotated Matrix

The third result of EFA points to the rotated matrix. As displayed in Table 4, the 20 items have one, two, or three values. The bolded values or the highest between other values indicate they represent its component.

Table 4: Rotated Component Matrix[a] of LCIS

	Component			
	Items	**1**	**2**	**3**
C1.	I know the origins of my ethnic group.		**0.740**	
C2.	I know the region where my ethnic group originates.		0.542	**0.570**
C4.	I know the customs and traditions of my ethnic group.	0.474	**0.570**	
C5.	I know the language of my ethnic group.	0.331	**0.672**	
C6.	I know the unique traditions of my ethnic group.			**0.706**
C7.	I know the heritage of my ethnic group.	0.438	**0.581**	
C8.	I know the traditional dances of my ethnic group.	**0.569**	0.512	
A1.	I am proud of the distinct traditional clothing of my ethnic group.	0.442	**0.627**	
A2.	I am happy to be part of my ethnic group.		0.464	**0.595**
A5.	I am impressed by the cultural achievements of my ethnic group.	**0.651**	0.361	
A6.	I am disappointed when the customs of my ethnic group are disrespected.	**0.664**	0.390	
A7.	I feel called to preserve the customs and traditions of my ethnic group.	**0.544**	0.369	0.322

A9.	I feel proud whenever the traditional songs of my ethnic group are performed at an event.	**0.607**		0.303
B1.	I introduce the customs of my ethnic group to my friends at school.	**0.713**	0.357	
B3.	I take the time to learn more about the culture of my ethnic group.	0.542		**0.542**
B4.	I participate in cultural activities of my ethnic group.	**0.787**		
B6.	I possess items that symbolize the pride of my ethnic group.	**0.756**	0.301	
B7.	I communicate using the language of my ethnic group.	0.533		**0.571**
B9.	I establish friendships with peers who come from my ethnic group.	**0.573**		0.409
B10.	I defend wholeheartedly when the traditions of my ethnic group are bullied.			**0.719**

The results presented in the rotated component matrix in Table 4 revealed three factors. Factor 1 comprised nine items, and Factor 2 and 3 each included five items. Table 5 displays mean, standard deviation, Cronbach's Alpha, and the result of the exploratory factor analysis (EFA).

(e) Reliability

The results of reliability test for 20 items revealed **Cronbach's Alpha = 0.938**. This indicated a very high level of internal consistency among the items on the scale. Meanwhile, **Cronbach's Alpha Based on Standardized Items = 0.940**. This was a slightly adjusted version of Cronbach's Alpha based on standardized items, which accounted for differences in variance among items. The similarity between 0.938 and 0.940 values suggested that the scale was well-balance and demonstrated a very high level of internal consistency among the items on the scale. In conclusion, these suggested that the LCIS was well-developed and adequate for further study and practical implementation.

Table 5: The Summary of EFA

Components	Commu-nalities	Mean	SD	Loading Factor	Cronbach's Alpha if Item Deleted
Cultural Pride (Eigenvalues= 9.531)					
B4. I participate in cultural activities of my ethnic group.	.708	3.35	.913	.787	.934
B6. I possess items that symbolize the pride of my ethnic group.	.680	3.40	.894	.756	.934
B1. I introduce the customs of my ethnic group to my friends at school.	.668	3.56	.820	.713	.933
A6. I am disappointed when the customs of my ethnic group are disrespected.	.648	3.56	.856	.664	.934
A5. I am impressed by the cultural achievements of my ethnic group.	.595	3.62	.845	.651	.945
A9. I feel proud whenever the traditional songs of my ethnic group are performed at an event.	.523	3.52	.804	.607	.933
B9. I establish friendships with peers who come from my ethnic group.	.508	3.35	.913	.573	.934
C8. I know the traditional dances of my ethnic group.	.592	3.40	.894	.569	.934
A7. I feel called to preserve the customs and traditions of my ethnic group.	.536	3.69	.874	.544	.936
Cultural Knowledge (Eigenvalues 1.505)					
C1. I know the origins of my ethnic group.	.616	3.57	.817	.740	.936
C5. I know the language of my ethnic group.	.627	3.30	.924	.672	.936

A1. I am proud of the distinct traditional clothing of my ethnic group.	.605	3.63	.880	.627	.934
C7. I know the heritage of my ethnic group.	.590	3.52	.899	.581	.934
C4. I know the customs and traditions of my ethnic group.	.551	3.54	.823	.570	.934
Ethnic Group Loyalty (Eigenvalues 1.021)					
B10. I defend whole heartedly when the traditions of my ethnic group are bullied.	.582	3.89	.829	.719	.936
C6. I know the unique traditions of my ethnic group.	.529	3.81	1.122	.706	.941
A2. I am happy to be part of my ethnic group.	.628	3.88	.788	.595	.935
B3. I take the time to learn more about the culture of my ethnic group.	.613	3.73	.814	.542	.935
B7. I communicate using the language of my ethnic group.	.622	3.73	.814	.571	.934
C2. I know the region where my ethnic group originates.	.633	3.82	.865	.570	.935

4. Discussion

Designing the Local Cultural Identity Scale (LCIS) follows a systematic process involving item development, scale development, and scale evaluation. Initially, 60 items were generated across three domains—cognitive, affective, and behavioral—drawing insights from relevant literature. After content validity analysis, 20 items have acceptable I-CVI scores and are adequate for further testing. Readability testing and subsequent item-total correlation analysis confirmed that 20 items were suitable for EFA. The EFA results demonstrated strong sampling adequacy (KMO = 0.961) and significant correlations among items (Bartlett's test, $p < 0.001$). A three-factor solution emerged, explaining 60.276% of the variance, with factors interpreted as Cultural Pride, Cultural Knowledge, and Ethnic Group Loyalty. The rotated component matrix and Cronbach's alpha test confirmed that 20 items aligned well with these factors, showcasing a scale structure and adequate reliability to assess local cultural identity.

Content validation is essential in developing the LCIS since its purpose is to ensure that its items accurately represent the intended construct. The study had five experts review the LCIS to confirm that all items are relevant to the construct. Since this study specifically focuses on local culture, involving five experts for content validation according Grand and Davis (1998) and Yusoff (2019) is sufficient, although other, such as Zamanzadeh et al. (2015), suggest more than five experts. Meanwhile, the initial scale's overall S-CVI is 0.90, which resulted in retaining 20 out of 30 items, leading to a final S-CVI of 1. This outcome aligns with other research considering a S-CVI value of 0.92 (Almanasreh et al., 2019).

In addition to content validation, examining the LCIS's reliability will confirm whether the scale meets junior high school students. The present study indicates that the items of LCIS have mean scores between 0.67 - 0.80 in readability, suggesting adequate readability values. This score falls within the "understand" and "strongly understand" categories (Lutfiyah & Supardi, 2019). A study by Patalay et al. (2018) and Lenzner (2014) examined the readability of the Strengths and Difficulties Questionnaire (SDQ) and the Survey Question Difficulty (SQD) by adopting standard tools, such as the Flesch–Kincaid Reading Grade, Gunning Fog Index, Coleman Liau Index, and Dale–Chall Readability Formula. Their findings emphasized disparities in readability across subscales and tools, implying the need for caution when using the SDQ and SQD. Their studies also underline the importance of considering readability during instrument development. The present study has not used these tools, however, based on calculations, the LCIS is relevant and appropriate for the designed group.

The content validation and readability test of LCIS provide confidence for the next step of exploratory factor analysis (EFA). The EFA results for 20 items reveal a Kaiser-Meyer-Olkin (KMO) Measure of Sampling

Adequacy value of 0.961, with item communalities ranging from 0.508 to 0.708. Additionally, the EFA scatter plot indicates the emergence of a three-factor structure, explaining 60.276% of the variance. These factors form a construct validity that includes cultural pride, cultural knowledge, and ethnic group loyalty that originally contained cognitive, affective, and behavioral domains. Studies provide additional evidence regarding the appropriateness of dimensions and the number of items for cultural-related measurements. For instance, Fu and Luo (2023) suggested a 12-item measurement model encompassing knowledge, emotional, and behavioral dimensions. On the side, Abdollah et al. (2016) identify seven factors comprising 30 items for assessing cultural values in consumer research. In their review, Matsunaga et al. (2023) examine 16 survey instruments related to culture and find mixed results, with the number of factors ranging from 2 to 7 and the number of items varying between 11 and 50. However, most studies report an average of approximately 20 items and three factors. These findings have supported the current study, where a 20-item structure appears to be a common and appropriate choice.

The LCIS, the main finding of this study, is one of the first instruments specifically designed for junior high school students to measure their local cultural identity. Unlike many counseling and psychological studies that treat local culture for adolescent or adult respondents, this scale identifies cultural pride, cultural knowledge, and ethnic group loyalty as factors of the local cultural identity for early adolescents. These findings hold significant practical implications for guidance and counseling at the junior high school level. By utilizing the scale, schools can assess students' cultural identity and better understand how their cultural knowledge, affective, and behavior shape their sense of belonging. Consequently, counselors, teachers, and principals can integrate the scale into comprehensive programs, including a guidance curriculum that fosters inclusivity for all students and responsive services for those requiring immediate intervention. For instance, counselors can draw on the scale results to design local cultural identity-strengthening group guidance and multiculturally responsive counseling sessions, thereby creating more supportive learning environments that encourage students to embrace their cultural identity while fostering respect for diversity. Although initially developed for junior high school students, high school counselors can adapt the scale for their students. To some extent, junior and senior high school students have certain commonalities. Finally, given that many existing identity measures stem from several cultural frameworks, the LCIS contributes to Indigenous counseling by integrating local cultural values in its development and validation, ensuring its relevance to students' lived experiences.

Instead of the beneficial findings, the study may have some limitations. For example, although the present study has involved public and Islamic junior high schools practicing slightly different curricula, it still involves a somewhat heterogeneous sample. These limit the applicability of the LCIS across more diverse local cultural school populations. It does not explore how students' cultural identity evolves, missing insights into developmental changes. Moreover, the study does not investigate how local cultural identity interacts with other factors, such as student well-being, academic performance, and social-emotional interactions. In addition, the current study does not examine its concurrent validity as different studies did. It potentially may affect its accuracy and reliability. For these limitations, future studies can consider several aspects. First, they should involve students from more diverse cultural and geographical backgrounds. These may help establish the scale's generalizability across different school populations. Second, future studies focus on whether the three factors remain stable across various student ethnic groups. Finally, the studies should explore the LCIS's face and concurrent validity using several relevant methods. Such studies may enhance the scale's reliability and construct validity.

5. Conclusion

This study develops a local cultural identity scale (LCIS) for school counseling purposes in junior high schools. By using this scale, school counselors will have confidentiality in providing interventions aligned with students' cultural backgrounds and personal experiences. The scale is designed and validated through expert review for content validity, student responses for readability, and statistical analyses (e.g., item-item and item-total correlation, Cronbach alpha, and Exploratory Factor Analysis). The final content of the LCIS consists of 20 items across three key dimensions: cultural pride, cultural knowledge, and ethnic group loyalty. Findings verify the scale's validity and reliability for measuring local cultural identity among junior high school students. The scale is a valuable resource for school counselors, enabling them to design more personalized and cultural-based

counseling interventions suitable to students' backgrounds. Future research on the LCIS may focus on improving its applicability across diverse school settings to establish its validity and reliability.

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Self-concept and Academic Achievement: A Comparative Study of Single Parent Children and Dual Parent Children

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Abstract
The majority of single parents Children with varying abilities often have low self-concept, which leads to a variety of problems and difficulties. Numerous studies show that compared to children from two-parent households, children of single parents have worse self-concept regarding their academic accomplishments. One worrying factor influencing the disturbance in students' academic performance is single parenting. The goal of the current study is to determine how single parenting affects students from single-parent households in terms of how their self-concept develops. Children with single parents and their dual-parent counterparts from all Meghalaya's Garo Hills Districts participated in this study. A purposive sample of one hundred participants was drawn from each of Meghalaya's Garo Hills Districts. Scheduled interviews and questionnaires were used to collect data for the study.

Keywords: Single Parent, Self-Concept, Academic Achievement, Academic Performance

1. Introduction

A parent's role is crucial in a child's formation of self-concept. Throughout their physical and psychological development, children may face numerous obstacles. The formation of a child's self-concept is crucial for promoting their positive growth. It has been noted that children raised by a single parent do not have an easy life. A person's view of their own behavior, aptitude, and traits is referred to as their self-concept. It is assumed based on how someone reacts and behaves under certain circumstances. (Shavelson et al., 1976). Since they subsequently offer incentives, standards, strategies, rules, and direction for behavior creation as well as an adjustment mechanism for challenges from the social environment, self-relevant acts and experiences make up the majority of one's self-concept. (Wur and Markus, 1986) Advances in the study of the self-concept emerged from the realization that the self-concept could no longer be investigated and that its operation was dependent upon the self-driven individual as well as the structure of the immediate social context. Beyond their self-concept, children's behavior is influenced by a multitude of other influences. One's overt behavior will not always be a direct reflection of their self-concept and its impacts. Rather, it will frequently have a bigger effect on mood swings, social decisions, how one presents themselves, the choice of social environment, and how one constructs their circumstances. Improving students' self-concepts is one of education's most crucial objectives since it can act as a

key moderator and even be the source of scholastic achievement. Self-concept is a multi-faceted construct but it is correlated with academic self-concept (Shavelson and Bolus, 1981).

In discussing the relationship between academic accomplishment and self-concept, Boivin (2003) states that both achievement and academic self-concept are influenced by one another. The relationship between academic achievement and academic self-concept has developed in the following ways: (a) academic self-concept measurement error would decrease with age; (b) self-concept stability over time would increase with age; (c) the relationship between academic achievement and academic self-concept would strengthen with age; and (d) academic achievement would predominate over academic self-concept during the early to middle elementary school years, supporting the skill-development model, but this relation would become reciprocal in the late elementary school years.

Family has a significant impact on how a child develops. This is especially true when you take into account the impact it has on a child's academic performance and self-concept, or how they see themselves. This study explores the intricacies of this subject. While recognizing the distinct qualities that can arise from such circumstances, we will also examine the possible difficulties that children in single-parent households may encounter. Our goal is to learn more about the relationship between family structure and academic success by contrasting and comparing their experiences with those of children in dual-parent households. In the end, this study aims to go beyond crude analogies and emphasize the unique qualities and difficulties that kids from diverse families might bring to the classroom.

While there may be potential challenges for children in single-parent families, it's important to remember that many factors influence self-concept and academic achievement. Positive parenting practices, community support systems, and individual student motivation can all play a significant role in success.

1.1 Significance of the Study

This study aims to examine how single parenting affects a child's self-concept and academic achievement, comparing these outcomes with children from two-parent families. The research highlights the critical role of family and social support in fostering a positive self-concept in children from single-parent homes. This information can inform the development of programs and interventions to support these children and their families.

1.2 Conceptual Framework

Family structure is the key independent variable that may have both direct and indirect effects on self-concept and academic achievement. Adjustment mechanism, Ability, Value, Self-relevant and Action are variables that shape how family structure impacts these two outcomes. Self-concept and academic achievement are expected to have a reciprocal relationship, where a positive self-concept can enhance academic performance and vice versa. This framework helps structure the study by showing how family dynamics and external factors are expected to interact and impact children's self-concept and academic success.

1.3 Theoretical Framework

Researcher have examined theories, such as Bandura's Social Learning Theory, which posits that children pick up knowledge by seeing and copying the actions of others, especially their parents. The ingenuity, resilience, and positive self-perception of single parents can be beneficial influences and on the other hand, a parent who experiences stress or negativity could unwittingly set an example for those behaviors. According to Bowlby's attachment theory, a child's self-concept is greatly influenced by the nature of their early relationship with their caregiver. The surviving parent in a single-parent home plays a critical role in fostering safe attachment. Attachment disruptions brought on by time constraints or low emotional availability may be detrimental to one's self-perception. Additionally, in Erikson's Psychosocial Stages, it was said that every developmental stage has possibilities and difficulties that affect one's self-concept. Families with only one parent may handle issues like "Industry vs. Inferiority" (achievement) in a different way. Children can gain a sense of competence and self-worth

in a supportive setting. Finally Theory of Family Systems: The family is a cohesive entity, and the welfare of one individual influences the others. Children can develop a positive self-concept through strong family connections and constructive communication. To offer a solid foundation, single parents may need to create larger support networks, such as friends and extended relatives.

This framework highlights the multifaceted nature of self-concept development in children of single parents. By considering these theories, researchers and caregivers can better understand the unique experiences of these children and promote their positive self-development.

1.4 Statement of the Problem

Considering the significance of the study researcher wished to conduct a study and it is entitled as "Self-concept and Academic Achievement: A comparative study of Single Parent Children and Dual Parent Children"

2. Review of Literature

While there is currently much dispute in the social sciences on whether motherhood typically improves one's well-being, one common assumption is that single parents are less fortunate than their paired counterparts. According to Stavrova and Fetchenhauer (2014), parenthood only had a negative impact on a person's life satisfaction and mental well-being if they were single but not paired (married or cohabiting), or if their country had a strong two-parent family norm. Most remarkably, even among single parents who did not adhere to the nation's societal norm of a two-parent family, the negative effects of this norm were still there. Students who come from single-parent households find it difficult to accept their own circumstances and become envious of their friends who have full families. The Teenagers raised by a single parent have a poor self-concept, which is viewed negatively from a social, emotional, moral, and cognitive standpoint (Aufirandra, F., Khairani., 2021).

Another study discovered that there is no correlation between the self-concept of adolescents with a single parent and that of adolescents with a single parent who is a woman. This applies to both father and mother-only children. (Yulastri, T., & Setianingsih, D., 2015), Irene Y.H. Based on information gathered from a survey of 430 families receiving government financial aid, the research discovered that various child-related concerns had an impact on various psychological self-concepts among the sample of low-income parents. While children's low grades reduced parents' sense of self-efficacy, children's health and behavioral issues increased parental stress. Compared to parents of younger children, the benefits were more pronounced for parents of teenagers. The .. The results suggested that in order to address the many demands of low-income families, there is a need for improved service integration as well as helpful aid delivery.

(Martin, Andrew J.; Herbert W. Marsh, 2011) shown that improvements in academic self-concept are correlated with improvements in later academic achievement and other desired educational outcomes. Additionally, they reaffirm that not only is self-concept a significant outcome variable in and of itself, but it also has a major impact on other desired educational outcomes.

Research indicates that there is a mutually reliant relationship between academic achievement and self-concept. Several aspects of self-concept are impacted by academic success. Significant relationships between academic success and a range of self-concept indices—which differed depending on nationality—were demonstrated by the researchers. Regarding self-esteem, there was no discernible variation between the two national populations. The findings were analyzed in light of country variations as well as theoretical predictions about the development of self-concept and academic success. (in the personality structure and educational system. Janek et al., 2001. Huang, C. (2011) investigated the relationship between academic achievement and self-concept and discovered that the only significant moderating factor in the relationship between prior academic achievement and subsequent self-concept and prior academic achievement and subsequent self-concept was globality/specificity of self-concept. High academic achievement and a positive self-concept are correlated, therefore it makes sense to incorporate self-enhancement and skill development into intervention programs.

3. Objective and Hypothesis

3.1 Objective

1. To assess Self-concept among single-parent children and dual-parent children.
2. To assess the academic achievement of single-parent children and dual-parent children.
3. To find the relation of Self-concept of single-parent children with their dual-parent counterparts.

3.2 Hypothesis

The following Hypothesis guided the study:
Ho, 1 (a). There exists no relation between Academic Achievement and self-concept of single parent children with their dual-parent counterparts.

4. Methodology

The investigator used Descriptive Survey design for the study. Out of the total 100 participants, purposive sampling procedure was used to obtain a sample size of 50 Single parent student and 50 Dual parent students. This procedure involved selecting the subjects in such a way that identified purposive groups in the population such as single-parent children were represented proportionally in the sample.

4.1 Data Collection

Data is collected from the total of 30 schools. In total of 30 schools total number of 50 students from single-parent homes and 50 from dual-parent homes participated in the study. Participants were included from all the districts of Garo Hills Meghalaya.

4.2 Sample and Sampling Method

Purposive sampling was employed in selecting 100 participants. 1 – 5 students from 10 randomly selected for students from dual-parent families.

Table 1: Sample showing frequency and percentage of students from single-parent families and dual families.

Family Type	Frequency percentage
Single Parent	50
Dual Parent	50
Total	100

Source: Field Data 2023'

The tables above show that most of the student respondents (50%) who participated in the survey were from single-parent family models, with 50% of the respondents from intact families and 18% from others which comprised students living foster parents or guardians.

4.3 Instrumentation

Tools used for the study:

i. Scale for Self Concept of single-parent children by researcher.
ii. Annual marks obtained by single parent Children studying in Class X in West Garo Hills Meghalaya.

4.4 Data Collection

Data is collected from the total of 30 schools. In total of 30 schools total number of 50 students from single-parent homes and 50 from dual-parent homes participated in the study. Participants were included from all the districts of Garo Hills Meghalaya.

4.5 Data Analysis

After data collection data analysis was carried out by using appropriate statistical techniques. The results were interpreted in terms of the objective and hypothesis formulated for the study, which follows in the following sections.

Objective 1: To asses Self-concept among single-parent children and dual-parent children.

	Mean	Median	SD	Sample Variance
Single Parent Children	78.22	78	8.71	75.8
Dual Parent Children	80.3	81	6.94	48.21

The data suggests that children from dual-parent households tend to have slightly higher self-concept scores (80.3) compared to children from single-parent households (78.22). The spread of the data (standard deviation) is larger for single-parent children (8.71) compared to dual-parent children (6.94). This indicates greater variability in self-concept scores among children in single-parent households.

Objective 2: To assess the academic achievement of single-parent children and dual-parent children.

Academic achievement				
		Mean	Median	SD
Single Parent Children		40	34.5	13.43
Dual Parent Children		56.8	56	13.88

Dual-parent children have a significantly higher average score (56.8) compared to single-parent children (40). This indicates that, on average, children in dual-parent households perform better academically. Both groups have similar standard deviations (around 13.4) indicating similar spreads of scores within each group.

Objective 3: To compare the development of Self-concept among single-parent children and dual parents.

	Sd	**Mean**	**r**
Single-parent family and academic achievement.	22.26	59.11	0.21
Dual Parent Family and academic achievement.	6.99	57.3	0.49

Analysis of Self-Concept Development in Single-Parent vs. Dual-Parent Children:

The data presents a comparison of self-concept development between children from single-parent families and those from dual-parent families, along with their relationship to academic achievement. Children from single-parent families have a slightly higher mean self-concept score (Mean = 59.11) compared to those from dual-parent families (Mean = 57.3). While the difference is relatively small, this suggests that children from single-parent households may have a marginally higher self-concept. The standard deviation for self-concept scores is significantly higher for children from single-parent families (SD = 22.26) compared to children from dual-parent families (SD = 6.99). This indicates that there is much greater variability in the self-concept scores among children from single-parent households. Some children in single-parent families may have very high self-concepts, while

others may have very low self-concepts. Conversely, the lower standard deviation for dual-parent families suggests that the self-concept scores for children in these families are more consistent, with less variation. The correlation between self-concept and academic achievement is weaker for children from single-parent families ($r = 0.21$), suggesting a relatively weak relationship between how children view themselves and their academic performance. On the other hand, the correlation for children from dual-parent families is stronger ($r = 0.49$), indicating a moderate positive relationship between self-concept and academic achievement. This means that, in dual-parent families, children with a higher self-concept are more likely to perform better academically.

5. Findings and Discussions

Children from dual-parent households had a slightly higher mean self-concept score (80.3) compared to children from single-parent households (78.22). This suggests that children from dual-parent households generally perceive themselves more positively in terms of self-worth and abilities. The standard deviation for self-concept scores was higher for children from single-parent households (8.71) compared to children from dual-parent households (6.94). This indicates greater variability in self-concept among single-parent children, meaning some of these children have notably lower or higher self-concept scores than others in their group. The sample variance (75.8) among single-parent children was also higher compared to dual-parent children (48.21), further confirming the greater inconsistency in self-concept scores within the single-parent group. This suggests a more diverse range of experiences or factors influencing self-concept among children in single-parent households.

The data reveals a slight but notable difference in self-concept scores between children from single-parent and dual-parent households. While children from dual-parent households report slightly higher mean scores, suggesting a more positive self-perception overall, the variability in scores among single-parent children highlights a more complex dynamic. The higher self-concept among dual-parent children may be attributed to greater emotional, financial, and social support from two caregivers, providing a more stable environment that fosters self-confidence. The larger standard deviation and variance in single-parent children's self-concept suggest that some of these children may be thriving, while others may face significant challenges. This could be due to a range of factors, including the level of parental involvement, socio-economic status, or the presence of extended family support in single-parent households. Children from single-parent households might experience inconsistent levels of emotional and social support, leading to greater differences in self-concept. Those who receive strong parental support may develop higher self-esteem, while those facing economic hardships or emotional stress may develop lower self-concept.

The academic achievement of children from dual-parent households (Mean = 56.8) is significantly higher than that of children from single-parent households (Mean = 40). This suggests that children in dual-parent families tend to perform better academically. The median academic score for dual-parent children (Median = 56) is also notably higher than that of single-parent children (Median = 34.5), further confirming the trend that dual-parent children generally achieve higher academic scores. Both single-parent and dual-parent groups show similar standard deviations (SD = 13.43 for single-parent children and SD = 13.88 for dual-parent children). This indicates that the distribution of scores within each group is fairly consistent, meaning the variability in academic performance is roughly the same in both groups.

The findings highlight a notable difference in academic performance between children from single-parent and dual-parent households. The significantly higher mean and median scores among dual-parent children suggest that family structure may have an impact on academic achievement. Children from dual-parent households may have access to more resources, such as time, support, and financial stability, which could contribute to their better academic outcomes.

The similar standard deviations between the two groups suggest that while the average performance differs, the range of academic achievements within each group remains comparable. This may indicate that factors beyond family structure, such as individual abilities, school environment, or external support systems, also play a role in determining academic success.

Further research could explore the underlying reasons for the academic disparity, including socioeconomic status, parental involvement, and access to educational resources, to better understand how these factors contribute to academic outcomes in different family structures.

Children from single-parent families have a higher mean self-concept score (Mean = 59.11) compared to children from dual-parent families (Mean = 57.3). Despite this, the difference in mean scores is relatively small.

The standard deviation of self-concept scores is considerably higher for single-parent children (SD = 22.26) compared to dual-parent children (SD = 6.99). This indicates a wider range of self-concept development among single-parent children, suggesting that while some have strong self-concepts, others may struggle.

In single-parent families, the correlation between self-concept and academic achievement is weak (r = 0.21), indicating that self-concept has little impact on academic performance for these children.

In dual-parent families, the correlation is stronger (r = 0.49), suggesting that children with higher self-concepts tend to perform better academically. The findings reveal interesting contrasts in the development of self-concept between children from single-parent and dual-parent households. While children from single-parent families exhibit slightly higher mean self-concept scores, the greater variability in their self-concept suggests that the experiences and emotional resilience of these children differ widely. Some children may develop a strong sense of self despite the challenges of being in a single-parent household, while others may struggle, potentially due to reduced emotional or social support.

On the other hand, children from dual-parent families show more consistent self-concept scores, and the stronger correlation with academic achievement (r = 0.49) suggests that self-concept is more closely linked to academic performance in this group. Children with a positive self-view in dual-parent families tend to perform better academically, likely because they may benefit from more stable support systems, both emotionally and academically.

The weaker correlation between self-concept and academic achievement in single-parent children (r = 0.21) implies that other factors, such as external support, socioeconomic conditions, or emotional challenges, may play a larger role in their academic outcomes than self-concept alone. This suggests that interventions aimed at improving academic performance in single-parent families should consider addressing not only self-concept but also broader social and environmental factors.

In conclusion, while the difference in mean self-concept scores between single-parent and dual-parent children is relatively small, the greater variability among single-parent children suggests that some of these children face more challenges related to self-concept. This finding points to the need for targeted support programs that can help single-parent households foster a positive self-concept in their children.

Further research could explore the causes behind the greater variability in self-concept among single-parent children, such as the impact of parental involvement, social networks, and coping strategies. Understanding these dynamics would help in developing more effective strategies to support the emotional and academic development of children from single-parent families.

6. Suggestions and Recommendations

Schools and community organizations should provide additional support programs tailored to single-parent families. These could include tutoring services, after-school programs, and counseling support to help bridge the academic gap. The lower academic performance in single-parent children may be linked to reduced parental involvement or economic resources. Providing structured support can alleviate some of the challenges faced by these families. Both schools and community groups should develop programs that encourage active parental involvement in children's academic lives, especially targeting single-parent households. Workshops on homework assistance, parent-teacher engagement, and time management could be beneficial. Increased parental involvement

is associated with better academic performance. Ensuring parents are equipped with the right skills and strategies to support their children's education may reduce the academic achievement gap. Provide equal access to educational resources such as books, computers, and internet access for students from low-income or single-parent households. Schools can partner with libraries, non-profits, or government programs to distribute these resources. A lack of access to learning materials can hinder academic achievement. Ensuring that all students, regardless of family background, have the tools they need to succeed is critical.

Establish financial aid or scholarship programs aimed specifically at children from single-parent households to help offset the economic disadvantages that might impact their academic success. Economic difficulties can limit educational opportunities. Financial support can reduce stress for single-parent families, allowing students to focus more on their studies and less on economic hardship. Schools should implement or expand psychosocial support services, including counseling and mentorship programs, especially for children from single-parent families. Mentorship programs can pair students with positive role models who provide academic and emotional support. Children in single-parent households may experience more stress or emotional challenges, which could impact academic performance. Providing psychological and emotional support may help these students thrive academically.

Conduct further studies to identify the specific factors that contribute to the academic achievement gap between single-parent and dual-parent children, such as socioeconomic factors, parental education levels, and school quality. Ongoing monitoring of interventions will help assess their effectiveness. Understanding the root causes of the academic disparity is crucial for developing more targeted interventions. Regular monitoring will ensure that any implemented strategies are effective in closing the academic achievement gap.

By addressing these areas, policymakers, educators, and community leaders can work together to create a more equitable educational environment for children, regardless of family structure. While the average self-concept score is slightly higher among single-parent children, the large variability within this group suggests that some may struggle with self-concept issues while others thrive. Children from dual-parent families tend to have more consistent self-concepts, with a stronger link between how they perceive themselves and their academic success. The weaker correlation between self-concept and academic achievement in single-parent children suggests that factors other than self-concept may play a more significant role in their academic outcomes, whereas self-concept appears to be a more important factor for academic success in dual-parent children.

Further investigation into the factors influencing self-concept development in single-parent families could help to explain the wide variability and the weaker relationship with academic achievement.

7. Conclusions

Children from single-parent households exhibit a marginally higher mean self-concept compared to their peers in dual-parent households. However, this difference is small and not necessarily indicative of a significant advantage. The large standard deviation in self-concept scores among single-parent children points to a wide range of experiences, with some children displaying strong self-concepts while others may struggle. This variability suggests that single-parent children face more diverse challenges and opportunities in developing their self-concept.

For children from dual-parent households, self-concept is more strongly correlated with academic achievement, indicating that children with a positive self-image are more likely to perform well academically. This highlights the importance of emotional support and self-esteem in fostering academic success within dual-parent families. The weak correlation between self-concept and academic achievement for single-parent children suggests that factors beyond self-concept, such as socioeconomic conditions or emotional support, may play a larger role in their academic outcomes. The findings suggest that interventions to support single-parent children should address not only their self-concept but also the broader factors that influence their academic performance, such as providing emotional support, enhancing parental involvement, and ensuring access to educational resources.

Overall, the study highlights the complexity of self-concept development and its relationship with academic achievement, especially in the context of different family structures. Tailored strategies are essential to support children from single-parent families, addressing both their emotional and academic needs.

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Appendix:1

Scale for Self-concept
(Please give your response for each of the following statements below)

		Scale for Self-concept					
Variables	Sl.no.	Statement	Response				
SELF CONCEPT (1-18) Adjustment mechanism, Ability, Value, Self-relevant and Action	1	I can deal with unpleasant environment at school (Anga nengnikanirangko chagrongoba uamangko name rachakna man'a.)	SA	A	U	D	SD
	2	I can very well adjust to complex situation at school. (Anga jedakgipaoba adjust ka'na man'a).	SA	A	U	D	SD
	3	I don't feel confident in responding to teachers in class. (Anga skigiparangna aganchakna kadongja).	SA	A	U	D	SD
	4	I feel proud of my progress in studies (Anga an'tangni poaraiani gadangna ku'si ong'a).	SA	A	U	D	SD
	5	I can improve my marks in math. (Anga matho marks namdapataniko dakronga).	SA	A	U	D	SD
	6	I don't feel confident about my own capabilities. (Anga an'tang dakna changaniko chuongnikja).	SA	A	U	D	SD
	7	There is always a feeling of inferiority complex within me. (Anga an'tangko pangna one nika).	SA	A	U	D	SD
	8	I am confidence in expressing my feelings / thoughts to my family members/teacher(Anga an'tangni gimin an'tangni manderangna/ skigiparangna parakna kadonge nikaia).	SA	A	U	D	SD
	9	I have a very low value of myself. (Anga an'tangko gamchate nikja).	SA	A	U	D	SD
	10	I never got engage in an unacceptable behaviour towards others.(Anga pangnaba sakgipina namgija bewalko dakja).	SA	A	U	D	SD
	11	I always solve my problems with ease.(Anga problemrangko nengraen namatna manaia).	SA	A	U	D	SD
	12	I am scared of telling others how I actually feel about being a single parent child . (Anga magipa saksan ba pagipa saksan baksasan ine gipinrangna agana krachanika).	SA	A	U	D	SD
	13	I seek help from my parent for all my work. (Anga homework ka'na an'tang magipa/pagipako dakchakna aganronga).	SA	A	U	D	SD

	14	I cannot express when i disagree with my teacher. /(Anga skigipa baksa chanchianio apsan ongjao talatna parongja).	SA	A	U	D	SD
	15	I never had anxiety when i face problem.(Anga problemrangko chagrongon kenjagokja).	SA	A	U	D	SD
	16	I am very discipline student at school (Anga kata ra'gipa bias ong'a).	SA	A	U	D	SD
	17	I get into quarrel with my friends. (Anga ripengskarang baksa jegrikaia).	SA	A	U	D	SD
	18	I copy the home assignments from my classmates (Anga homeworkrangko ripengskaniko nie seaia).	SA	A	U	D	SD