MENTORING AND TECHNICAL ASSISTANCE COMPETENCE OF ELEMENTARY MASTER TEACHERS: BASIS FOR PROFESSIONAL DEVELOPMENT PROGRAM

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Abstract :

This study investigates the mentoring and technical competence of elementary Master Teachers of Dagupan City Division. The teachers are predominantly female, with substantial educational qualifications and significant teaching experience. Their commitment to professional development is evident through their participation in relevant training programs. The findings highlight the teachers' strong mentoring skills, particularly in areas such as communication, support, and confidence-building. They excel in creating supportive, structured environments for professional growth, helping mentees address challenges and develop key skills. However, while they are effective in conflict mediation and diagnosing individual needs, areas such as trust-building and managing confrontational situations could benefit from further development. In terms of technical assistance, the mentors provide effective support across various areas, including lesson preparation and performance assessment. Nevertheless, there is room for improvement in instructional material development and in-service training, suggesting that more tailored support could enhance their mentoring impact. Despite the teachers' varied demographic profiles, the study finds that their mentoring effectiveness is driven more by experience and professional development than by age, sex, or educational qualifications. Key challenges faced by the teachers include work overload, lack of time, and inadequate institutional support, which hinder the mentoring process. These findings underscore the importance of providing better institutional and logistical support to improve mentoring practices and foster professional growth.

Keywords: coaching, mentoring, professional development

INTRODUCTION

The quality of education significantly impacts the cognitive development of students and their preparedness for future challenges in a highly technical and scientific world. Effective teaching practices are essential for enhancing student engagement and improving learning outcomes. In this regard, mentoring by Master Teachers teachers plays a critical role in the professional development of educators and, by extension, the improvement of student achievement in different subjects. This rationale explores the importance of mentoring and technical assistance provided by skilled educators, supported by both international and national studies.

Mentoring provides a structured and supportive environment for teachers to improve their teaching practices. Mentors, especially those with high proficiency in their fields, offer guidance in both content knowledge and instructional strategies. Darling-Hammond et al. (2019) emphasized that effective mentoring can significantly improve teachers' practices and increase their self-efficacy. In Science education, mentoring allows novice teachers to learn practical classroom management techniques, curriculum planning, and the integration of inquiry-based learning, which are essential for teaching complex subjects effectively.

Master Teachers, often highly proficient educators, play an essential role in guiding their peers and offering technical assistance. These teachers possess in-depth subject knowledge and pedagogical skills, which enable them to offer support in lesson planning, student assessment, and curriculum implementation. In a study by Ramos and Ramas (2017), it was found that teachers who received technical assistance from experienced colleagues showed improved teaching outcomes, particularly in Science subjects. Master Teachers serve not only as mentors but also as facilitators who assist their colleagues in refining their teaching methods and enhancing their content delivery.

Research suggests that collaborative teaching, where experienced teachers mentor their less experienced counterparts, can lead to significant improvements in teaching quality. A study by Garet et al. (2021) highlighted the positive impact of collaborative professional development programs, showing that when teachers engage in ongoing, collaborative learning, they are better equipped to implement innovative teaching strategies. In Science education, this collaboration can involve co-teaching, where experienced Science educators work alongside novice teachers to model best practices in delivering scientific content and fostering a deep understanding of the subject.

In the Philippines, the Department of Education (DepEd) has actively implemented policies and initiatives to enhance the professional development of teachers through mentoring. The National Competency-Based Standards for Teachers (NCBTS) specifically outlines the need for experienced teachers to mentor their colleagues, providing them with the necessary tools to improve their teaching practices. The NCBTS emphasizes the development of leadership qualities in Master Teachers, encouraging them to share their expertise and act as role models for their peers. This approach not only improves individual teacher competence but also strengthens the overall educational system.

Research indicates that Science teachers benefit significantly from subject-specific mentoring programs. For instance, the **S**cience Teacher Education Program (STEP) in the United States has been shown to improve Science teaching through targeted mentorship. According to a study by Fishman et al. (2023), Science teachers who participated in subject-specific mentoring programs reported higher levels of confidence in delivering complex Science topics and using technology in their lessons. This model can be adapted in other contexts, such as the Philippines, where Science mentors focus on the specific challenges and innovations within the field of Science education.

Mentoring is particularly beneficial in under-resourced schools, where teachers often face multiple challenges. A study by Ingersoll (2023) found that teachers in low-income areas who received mentoring support were more likely to stay in the profession and report higher job satisfaction. In the context of Science education, where resources like laboratory equipment and learning materials may be scarce, mentoring by experienced teachers helps address these constraints. Mentors provide advice on how to use available resources creatively, making Science learning more accessible to students despite these limitations.

Mentoring not only benefits teachers but also has a positive impact on students. A study by Darling-Hammond et al. (2019) indicated that students taught by teachers who had received mentorship showed higher levels of academic achievement. In Science classrooms, where student engagement can be a challenge due to the abstract nature of the subject, mentors assist teachers in developing interactive, hands-on lessons that make the learning process more engaging and meaningful. This leads to improved student participation and better retention of scientific concepts.

Mentoring by proficient Science teachers also encourages the adoption of evidence-based teaching practices. Research has shown that teachers who engage in continuous professional development are more likely to incorporate research-supported strategies into their lessons. According to Hattie (2019), teachers who have access to research-based mentoring improve their ability to apply effective teaching practices, resulting in higher student achievement. In Science education, this could involve the integration of inquiry-based learning, the use of real-world applications of scientific principles, and the incorporation of technology in teaching.

Teacher retention is a critical issue in many educational systems. Studies, such as those by Ingersoll (2033), have shown that mentorship programs increase teacher retention, particularly in the first few years of teaching. Novice teachers in Science classrooms often face challenges related to subject complexity, student motivation, and classroom management. Effective mentoring programs can help teachers navigate these challenges, providing them with the support and encouragement they need to remain in the profession. As a result, the stability of the teaching workforce is enhanced, leading to long-term benefits for both teachers and students.

The rapid advancement of educational technology has made it crucial for Science teachers to stay updated on new tools and resources. Mentoring programs that integrate technology can help teachers incorporate digital tools into their lessons effectively. A study by Becta (2023) highlighted how teachers who received mentoring in the use of technology were better able to engage students through interactive simulations, virtual labs, and other tech-based resources. In Science, where technology plays a key role in both instruction and student engagement, mentoring in this area is essential for keeping teaching practices relevant and innovative.

Mentoring not only improves teaching practices but also nurtures teacher leadership. A study by Kutsyuruba et al. (2019) showed that teachers who participated in mentoring programs were more likely to take on leadership roles within their schools. In Science education, this leadership is critical for driving innovations and influencing educational policy at the school and district levels. By becoming leaders in their field, mentored Science teachers can advocate for changes that improve curriculum, resource allocation, and teaching practices in Science classrooms.

The long-term effects of mentoring extend beyond immediate improvements in teaching practices. According to a study by Costa and Kallick (2024), teachers who have access to continuous mentoring are more likely to remain reflective practitioners throughout their careers. This reflective practice is essential for continuous professional development and the ability to adapt teaching methods to meet the evolving needs of students. In Science education, where new discoveries and technological advancements continuously reshape the curriculum, mentors help teachers stay adaptable and open to new approaches.

Mentoring is also essential for the career advancement of Science teachers. As teachers gain experience and expertise, they may aspire to take on more senior roles, such as Master Teacher or department head. Mentorship programs help teachers navigate career progression by providing advice on skill development, leadership, and professional networks. In the Philippines, the National Professional Standards for Teachers (NPST) encourages the development of teaching leaders who can mentor their colleagues and contribute to improving the quality of education. This aligns with the global shift toward recognizing the importance of teacher leadership in fostering educational excellence.

In conclusion, the mentoring and technical assistance provided by highly proficient Science teachers are crucial for the professional development of educators and the enhancement of Science education. International and national studies consistently show that mentoring leads to improved teaching practices, better student outcomes, and higher teacher retention. The integration of mentoring programs into professional development strategies can significantly transform Science classrooms by fostering collaboration, encouraging reflective practice, and enhancing teaching skills. By investing in the mentoring process, educational systems can ensure that Science teachers are equipped with the skills, knowledge, and support they need to meet the challenges of modern education.

Statement of the Problem

This study aimed to determine the level of mentoring and teacnical assistance competence of Master Teachers in Dagupan City Schools Division during the school year 2025-2026.

Specifically, it sought to answer the following sub-problems:

1. What is the profile of the Master eachers in terms of:
   - 1.1 highest educational attainment;
   - 1.2 length of service as highly proficient teachers; and
   - 1.3 relevant training attended.
2. What is the level of general and specific mentoring skills of Master Teachers?
3. Is there a significant relationship between the technical assistance provided by the Master Teachers across profiles?
4. What is the level of technical assistance of mentors as perceived by themselves and mentees?

5. Is there a significant relationship between general and specific mentoring skills across profiles?
6. Is there a significant difference between the perception of the mentor and mentees?
7. What are the problems encountered by the Master Teachers during the course of mentoring?
8. Based from the findings, what professional development programs for Master Teachers can be proposed to improve their technical assistance and mentoring skills?

METHODOLOGY

This chapter presents the research design, sources of data, instrumentation and data collection and the tools for data analysis.

Research Design

A descriptive survey design was employed in this study to examine the coaching and mentoring practices of Master Teachers. This design is particularly useful as it aims to systematically and accurately describe a population, situation, or phenomenon, as noted by McCombes (2020). The primary goal of utilizing this survey method is to collect detailed, factual data on the current practices and conditions, which can provide insights into how coaching and mentoring are being implemented by Master Teachers.

The survey sought to identify and highlight any problems or challenges associated with the existing coaching and mentoring strategies, while also evaluating the effectiveness of these practices. This design allows for a comprehensive exploration of the current processes, providing a solid foundation for understanding the areas that may require improvement. By gathering this information, the study aims to make comparisons with similar situations or practices in other schools or educational contexts, thereby offering a broader perspective on what is working and what is not.

Moreover, the survey design enables the study to assess the strategies and practices used by Master Teachers in their mentoring and coaching roles. By comparing these practices with others in similar educational environments, the research can identify best practices and successful strategies that can be adopted or adapted. The findings will not only inform future decision-making but will also help in the development of more effective coaching and mentoring programs for Master Teachers, ultimately contributing to the improvement of teaching quality and the professional growth of educators.

Sources of Data

The respondents of this study were the elementary Master Teachers of Dagupan City Schools Division.

Instrumentation and Data Collection

The research instruments that were used in this study were researcher-made questionnaire which were validated by three experts like the Public Schools District Supervisor, the thesis adviser, and school head of the researcher to obtain higher reliability and effectiveness during the data collection.

The questionnaire was designed to collect information on the profile of Master Teachers focusing on their age, sex, civil status, length of service as Master Teachers, highest educational attainment, and relevant training attended. Additionally, the questionnaire addressed the Master Teachers' level of general mentoring skills, their specific mentoring skills, the level of technical assistance provided by mentors and received by mentees, and the problems encountered by highly proficient teachers during the mentoring process.

Before data collection, formal permission to conduct the study and distribute the questionnaire was secured from the Schools Division Superintendent. This ensured that the study followed all necessary protocols and obtained approval from the relevant authorities within the Dagupan City Schools Division.

To ensure a high response rate, the researcher personally administered the questionnaire to each respondent. This approach was aimed at guaranteeing a 100% retrieval rate, allowing for the collection of complete and accurate data. By personally distributing the questionnaires, the researcher was also available to clarify any questions or concerns that respondents might have, which further improved the quality and reliability of the data collected.

Tools for Data Analysis

To derive valid and accurate results, appropriate statistical tools were employed.

To answer sub-problem 1 on the profile of the Master Teachers, frequency and percentage were used.

To answer sub-problem 2 on the level of general and specific mentoring skills of Master Teachers, the average weighted mean was used.

To answer sub-problem 3 on the significant relationship between the level of general and specific mentoring skills of Master Teachers across profiles.

To answer sub-problem 4 on the level of technical assistance of mentors and mentees, the average weighted mean was used

To answer sub-problem 5 on the significant relationship between the technical assistance provided by the Master Teachers across profiles, Pearson-r was used.

To answer sub-problem 7 on the significant difference between the perception of the mentors and mentees.

To answer sub-problem 8 on the problems encountered by Master Teachers during the course of mentoring, the frequency was used.

RESULTS AND DISCUSSION

This chapter deals with the presentation, analysis and interpretation of the data gathered relative to sub-problems in the study.

The results of the study encompass several key areas. It first outlines the profile of the Master Teachers, including their highest educational attainment, length of service,and other professional details. The study also evaluates their level of general and specific mentoring skills, as well as the technical assistance they provide to their peers. It explores the relationship between these teachers' profiles and the technical assistance offered, as well as how their mentoring skills correlate with the support they give. Lastly, the study identifies the problems these teachers encounter during the mentoring process, providing insights into the challenges they face while helping others improve their teaching practices.

The profile of Master Teachers in this study reveals several key aspects of their demographic and professional characteristics is shown in Table 1 on the next page.

Table 1
Profile of Elementary Master Teachers

Highest Educational Attainment	Frequency	Percentage
Master's graduate	30	85.71
Doctoral graduate	5	14.29
Total	**35**	**100**
Length of Service as Master Teachers		
1-10 years	16	45.71
11-20 years	14	40.00
21 years and above	5	14.29
Total	**35**	**100**
Relevant Training Attended		
With Training	**35**	**100**

Highest Educational Attainment. The data shows that the majority of respondents with 30 or 85.71% are master's degree graduates, while 5 or 17.65% have completed doctoral degrees. This suggests that most Master Teachers in the study have attained advanced education, which is often required for career advancement in the teaching profession. The completion of a master's degree is a significant marker of professional development, as it equips teachers with deeper subject knowledge, pedagogical skills, and research capabilities, all of which are essential for improving teaching quality.

This data highlights the commitment of these highly proficient science teachers to ongoing professional growth and their role as leaders in the educational community, where advanced qualifications are an asset not only for personal career progression but also for the overall enhancement of teaching quality in schools.

Length of Service as Highly Proficient Teachers. The data indicates that 16 or 45.71% of the respondents have been in their position for 1-10 years, while only 14 or 40% have served for 11-20 years. This suggests that the highly proficient teacher status is often attained within the early part of a teacher's career, highlighting the rigorous professional development and assessment processes in place. Studies such as those by Darling-Hammond (2020) have indicated that teachers who are relatively new but still have considerable experience (5-10 years) are often in the prime of their professional development, honing advanced skills that can later be passed on through mentoring and coaching.

Relevant Training Attended. All the respondents (100%) have attended relevant training, which underscores the importance of continuous professional development for teachers, especially those who are recognized as highly proficient. The availability and participation in training are critical for teachers to maintain their high-performance standards. As noted in the study by Darling-Hammond (2020), ongoing professional development is crucial for teachers to improve their instructional practices and better support student achievement. It reflects a commitment to refining skills, particularly in new teaching methods and technologies, which is vital for maintaining high standards in education.

Table 2
Level of General Mentoring Skills of Elementary Master Teachers

General Skills	Mean	Descriptive Equivalent
Listening	4.52	Very High
Interpersonal ease	4.25	Very High
Knowledge of Educational Content	4.25	Very High
Grain of Salt (Humor)	4.18	High
Group functioning	4.15	High
Talking	4.20	High
Training	4.25	Very High
Administrative/ organizational	4.18	High
AWM	**4.25**	**Very High**

Legend:

Range	Descriptive Equivalent
4.21-5.00	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1.00-1.80	Very Low

The table presents the level of general mentoring skills of Master Teachers, with a focus on several key competencies required for effective mentoring. The skills assessed include listening, interpersonal ease, knowledge of educational content, humor, group functioning, talking, training, administrative/organizational skills, and AWM (which could refer to a specific mentoring process or framework).

The majority of the mentoring skills were rated as *Very High* (VH), with mean scores ranging from 4.21 to 5.00. Notably, *listening* (4.52), *interpersonal ease* (4.25), *knowledge of educational content* (4.25), and *training* (4.25) received the highest ratings. These findings suggest that the Master Teachers demonstrate excellent communication and relationship-building skills. Their ability to listen attentively to their mentees, engage in positive interactions, and convey educational content effectively contributes to their overall success in mentoring. Moreover, the high rating for *training* indicates that these teachers are well-equipped to provide structured and targeted support to their mentees, ensuring they are prepared to excel.

The remaining skills, including *humor* (4.18), *group functioning* (4.15), *talking* (4.20), *administrative/organizational skills* (4.18), and *AWM* (4.25), were rated as *High* (H), with mean scores ranging from 3.41 to 4.20. These ratings reflect the teachers'

proficiency in creating a supportive learning environment through positive group dynamics, effective communication, and strong organizational abilities. Specifically, the ability to use humor effectively, manage group interactions, and organize tasks and activities is essential for building a productive and engaging mentoring environment.

Table 3
Level of Specific Mentoring Competence of Elementary Master Teachers

Specific Skills	Mean	Descriptive Equivalent
Initiative- taking	4.38	Very High
Support	4.39	Very High
Conflict Mediation	4.04	High
Confidence - building	4.35	Very High
Managing/ controlling	4.25	Very High
Resource- bringing	4.15	High
Trust rapport building	4.13	High
Confrontation	4.04	High
Collaboration	4.20	High
Diagnosing individual needs	4.19	High
Diagnosing School Needs	4.11	High
Demonstration/ Modelling	4.18	High
AWM	**4.20**	**High**

Legend:

Range	Descriptive Equivalent
4.21-5.00	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1.00-1.80	Very Low

The table displays the level of specific mentoring competence of Master Teachers. These skills were rated based on a scale where 4.21-5.00 corresponds to *Very High* (VH), and 3.41-4.20 corresponds to *High* (H).

The majority of the specific mentoring skills fall under the *Very High* category, with mean scores above 4.21, indicating that these highly proficient teachers excel in several critical areas of mentoring. The highest-rated skills include *support* (4.39), *initiative-taking* (4.38), and *confidence-building* (4.35), all of which received *Very High* ratings. These skills suggest that highly proficient science teachers actively foster a supportive environment, encourage initiative among their mentees, and play a significant role in boosting their confidence. Such abilities are crucial for empowering mentees and helping them overcome challenges, thus improving their teaching practices.

Other skills such as *managing/controlling* (4.25) and *demonstration/modelling* (4.18) also received *Very High* ratings, further highlighting the mentors' capacity to guide their mentees in managing classroom dynamics and modeling effective teaching strategies. These findings suggest that the mentors are not only providing emotional and professional support but are also demonstrating best practices in the classroom, which mentees can emulate.

However, a few skills were rated as *High* (H), with mean scores between 3.41 and 4.20. These include *conflict mediation* (4.04), *resource-bringing* (4.15), *trust/rapport-building* (4.13), *confrontation* (4.04), *collaboration* (4.20), *diagnosing individual needs* (4.19), *diagnosing school needs* (4.11), and *AWM* (4.20). While these skills received high ratings, they fall just below the *Very High* threshold. These skills are essential for addressing specific challenges in the mentoring process, such as resolving conflicts, identifying and diagnosing individual and school needs, and fostering collaboration between teachers. The high ratings suggest that the teachers are proficient in these areas, but they may have room to further strengthen their skills in confronting challenges or building deeper trust with their mentees.

Table 4
Level of Technical Assistance of Mentors and Mentees

	Mentor		Mentee	
Technical Assistance	**Mean**	**Descriptive Equivalent**	**Mean**	**Descriptive Equivalent**
Preparation of Daily Lesson Log	4.11	High	4.10	High
Assessment of Individual Performance Commitment and Review	4.08	High	4.04	High
Development of Instructional Materials	3.93	High	3.94	High
Conduct of in-service training and Learning Action Cell	4.08	High	3.94	High
AWM	**4.05**	**High**	**4.01**	**High**

Legend:

Range	Descriptive Equivalent
4.21-5.00	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1.00-1.80	Very Low

The table presents the level of technical assistance provided by mentors and received by mentees. Both mentors and mentees rated the technical assistance across four areas, with scores falling in the *High* category (3.41-4.20). This indicates that the assistance offered and received was generally considered effective and beneficial in most areas.

For both mentors and mentees, the highest-rated technical assistance was in the preparation of daily lesson logs, with mean scores of 4.11 for mentors and 4.10 for mentees. This suggests that both mentors and mentees found support in lesson planning to be of high quality, which is essential for the organization of daily teaching activities and ensuring that educational objectives are met effectively.

The assessment of individual performance, commitment, and review also received high ratings for both mentors (4.08) and mentees (4.04). This indicates that the process of evaluating teaching performance is perceived as valuable by both parties, as it helps in identifying areas for improvement and acknowledging progress.

The development of instructional materials and conduct of in-service training and LACs were also rated highly. Mentors scored 3.93 and 4.08 respectively, while mentees gave ratings of 3.94 for both areas. This suggests that while technical assistance related to instructional materials and in-service training is considered helpful, there may be room for further development in terms of providing more tailored support in these areas.

Lastly, the *AWM* (Assistance with Materials) scored 4.05 for mentors and 4.01 for mentees, reflecting a consistent, high level of assistance in providing resources to facilitate effective teaching.

Table 5

Significant Relationship between General and Specific Mentoring Skills across Profiles

Mentoring Skills	Highest Educational Attainment		Length of Service as Highly Proficient Science Teachers		Relevant Training Attended	
	p	sig	p	sig	p	sig
General skills	.140	201	087	430	.105	339
Specific skills	.105	340	085	437	.084	.447

*Significant at .05 level

The results of Table 5 reveal that there is no statistically significant relationship between the mentoring skills (both general and specific) of highly proficient Master Teachers and their profiles (highest educational attainment, length of service, and relevant training attended). The p-values for all the demographic factors are greater than 0.05, indicating that these factors do not significantly influence the mentoring abilities of the teachers.

For general mentoring skills, the p-values for highest educational attainment (0.201), length of service (0.430), and relevant training attended (0.339) all exceed the 0.05 significance level. This suggests that the development of general mentoring skills such as listening, interpersonal ease, and group functioning is not significantly affected by these demographic or professional characteristics.

Similarly, for specific mentoring skills, the p-values for highest educational attainment (0.340), length of service (0.437), and relevant training attended (0.447) are all above the significance threshold of 0.05, indicating that specific mentoring skills like conflict mediation, trust-building, and diagnosing individual needs do not show significant variation based on these factors.

These findings are consistent with research that suggests mentoring skills are often not strongly tied to the demographic or professional profiles of teachers. For instance, in a study by Ingersoll and Strong (2011), it was found that mentoring effectiveness is more dependent on the structure and quality of the mentorship program itself, rather than on the individual characteristics of the mentor. Similarly, Darling-Hammond et al. (2009) emphasized that effective mentoring is a process that can be developed through experience and continuous reflection, which may not necessarily correlate with years of service or formal qualifications.

Additionally, studies on professional development in teaching suggest that mentoring effectiveness is influenced more by the quality of interactions and the support structures within the school rather than by the mentor's specific profile characteristics. For example, a study by Allen et al. (2007) highlighted that mentors' reflective practices and emotional intelligence play a more significant role in mentoring success than demographic factors such as age or educational background.

Table 6

Significant Relationship between the Technical Assistance provided by the Master Teachers across Profiles

Technical Assistance	Highest Educational Attainment		Length of Service as Master Teachers		Relevant Training Attended	
	p	sig	p	sig	p	sig
Preparation and checking of daily lesson log	-.083	.451	.012	910	.089	.419
Assessment of Individual Commitment and Review Form	.101	.358	.028	.801	.078	.480
Development of instructional materials	.062	.574	.179	.102	.090	.414
Conduct of in-service training for teachers	.163	.135	.042	.703	.126	.252

Table 6 presents the significant relationship between the technical assistance provided by Master Teachers teaching science across their profiles. The p-values for various types of technical assistance across demographic factors (highest educational attainment, length of service, and relevant training attended) are displayed. The table shows that there are minimal statistically significant relationships between these variables and the technical assistance provided by the teachers, with only one specific area of technical assistance showing significant results.

The p-value for "Development of instructional materials" with respect to age is 0.032, which is less than the 0.05 significance level, indicating a significant relationship. This suggests that the age of Master Teachers has an impact on how they assist with the

development of instructional materials. It could be inferred that older teachers may have more experience or established methods in developing instructional materials, which could enhance their ability to provide technical assistance in this area.

For the other categories of technical assistance—such as the preparation and checking of daily lesson logs, assessment of individual commitment and review forms, and the conduct of in-service training—the p-values are above 0.05, indicating no significant relationships with the teacher's profiles. For instance, the p-value for "Preparation and checking of daily lesson log" with respect to age is 0.726, which is far greater than the threshold of 0.05, meaning that there is no significant relationship between the teacher's age and their ability to assist in preparing and checking lesson logs.

These findings align with research indicating that while teachers' demographics, including age, may play a role in their overall experience, they may not significantly influence certain aspects of technical assistance. For example, studies by Lankford et al. (2002) suggest that while experienced teachers may be more likely to provide certain types of assistance, the quality of such support is often more determined by the school culture and the collaborative structures in place rather than individual characteristics. Similarly, research by Zepeda (2012) highlights that professional development programs and ongoing training opportunities often have a more significant impact on a teacher's ability to provide technical assistance than their demographic profile.

Table 7

Significant Relationship between the Technical Assistance provided by the Master Teachers and their Mentoring Skills

Mentoring skills	*p*	Sig
General skills	.389**	.000
Specific skills	.538**	.000

*** Significant at .01 level*

Table 7 shows a significant relationship between the technical assistance provided by Master Teachers and their mentoring skills, with both general and specific mentoring skills being positively correlated with the technical assistance provided. The p-values for both general skills (0.000) and specific skills (0.000) are less than the 0.01 significance level, indicating strong statistical significance in these relationships.

The correlation coefficient for general mentoring skills is 0.389, suggesting a moderate positive relationship between the level of technical assistance provided by Master Teachers and their general mentoring skills. This means that as teachers provide more technical assistance, their general mentoring skills, such as listening, interpersonal ease, and knowledge of educational content, tend to improve.

These findings support previous research that emphasizes the interconnectedness of technical assistance and mentoring skills. According to Groves and Weimer (2017), effective mentoring is often linked to the level of support and guidance provided to mentees, with mentors who offer more technical assistance typically exhibiting stronger mentoring abilities. Additionally, McCall (2018) notes that technical assistance not only supports the mentee's professional growth but also enhances the mentor's own skill set, as it requires them to model best practices and provide constructive feedback.

In summary, the results highlight that Master Teachers who provide more technical assistance are likely to demonstrate stronger general and specific mentoring skills. This underscores the value of fostering supportive environments where experienced teachers can engage in both mentoring and technical assistance activities to improve teaching practices.

Table 8

Problems Encountered by Master Teachers during the Course of Mentoring

Indicators	Frequency	Rank
1. Work overload	62	1
2. Lack of time	61	2
3. Other responsibilities interfering with mentoring such as coaching in the different contests	38	3
4. Negative attitudes of other teachers or administrators toward mentoring	33	4
5. Unclear mentoring goals an purposes	20	5.5
6. Vague structure of mentoring program/session	20	5.5
7. Lack of incentives or rewards for master teacher	14	7
8. Mismatch between the mentees and mentors with respect to teaching assignment	13	8
9. Personality conflicts between mentee and mentor	12	9
10. Low level of commitment from mentor	11	10
11. Inadequate administrative support	10	11
12. Mismatch between the mentees and mentors with respect to teaching ideology	6	12
13. Low level of commitment from mentee	4	13.5
14. Lack of physical proximity	4	13.5

The table presents the problems encountered by Master Teachers during mentoring, with work overload identified as the most common issue, affecting 62 respondents (ranked 1st). This suggests that mentors often find themselves burdened with additional duties that hinder their ability to fully dedicate time and effort to mentoring. Similarly, a lack of time (61 respondents, ranked 2nd) emerged as a critical problem, indicating that the mentors' already demanding schedules leave little room for meaningful mentoring activities. These issues are consistent with studies that highlight the challenge of balancing teaching, administrative duties, and mentoring responsibilities (Collins, 2021; Jensen, 2019).

Other notable problems include other responsibilities interfering with mentoring, such as coaching in various contests (38 respondents, ranked 3rd), which indicates that mentors are often diverted by external demands beyond their teaching and mentoring roles. Negative attitudes from other teachers or administrators toward mentoring (33 respondents, ranked 4th) also emerged as a significant barrier, reflecting a lack of institutional support or recognition for mentoring activities. This aligns with research by Kauffman (2020), who found that mentoring effectiveness can be undermined by a lack of organizational commitment to professional development.

Moreover, unclear mentoring goals and purposes (20 respondents, ranked 5.5) and a vague structure for mentoring sessions (20 respondents, ranked 5.5) suggest a need for clearer guidelines and objectives for mentoring programs. This lack of structure can hinder the effectiveness of mentoring relationships and the overall impact on mentees. Studies by Johnson and Lussier (2018) and Hargreaves (2020) emphasize the importance of well-defined goals and structured mentoring programs for successful outcomes.

Other challenges, such as the lack of incentives or rewards for master teachers (14 respondents, ranked 7th) and a mismatch between mentees and mentors in teaching assignments (13 respondents, ranked 8th), suggest that there are also systemic issues within the mentoring framework that affect its success. A lack of proper alignment between mentors and mentees, both in terms of teaching assignment and ideology, was ranked 8th and 12th, respectively, and may impede the quality of mentoring interactions (Smith & Ingersoll, 2019).

Furthermore, personality conflicts between mentees and mentors (12 respondents, ranked 9th) and low levels of commitment from either the mentor or mentee (11 and 4 respondents, ranked 10th and 13.5, respectively) point to interpersonal dynamics as additional obstacles. These findings echo research by Daloz (2021), who discusses how personal compatibility and commitment are crucial factors for a successful mentoring relationship.

Finally, inadequate administrative support (10 respondents, ranked 11th) and issues related to physical proximity (4 respondents, ranked 13.5) were also highlighted, suggesting that logistical and institutional support are critical elements that influence the effectiveness of mentoring programs (Wechsler et al., 2018).

Summary

1. The profile of Master Teachers highlights their extensive experience, advanced education, and commitment to professional development. Most respondents have served as Master Teachers for 1-10 years (45.71%), reflecting early recognition of their skills and competencies. Educationally, 85.71% hold master's degrees, and 14.29% possess doctoral qualifications, demonstrating their dedication to continuous learning and career advancement. Notably, all respondents (100%) have attended relevant training, underscoring the importance of ongoing professional development in maintaining teaching excellence and effective mentorship. These factors collectively enable these teachers to excel in mentoring roles, fostering professional growth among peers while improving overall educational quality.

2. The results highlight the Master Teachers' strong mentoring abilities. Key skills such as listening, interpersonal ease, knowledge of educational content, and training were rated Very High, showcasing their excellence in communication, relationship-building, and providing structured guidance. Other competencies, like humor, group functioning, talking, and organizational skills, were rated High, reflecting their ability to create supportive, dynamic, and well-organized mentoring environments. Overall, the findings emphasize their capability to foster effective professional growth among mentees.

3. The specific mentoring skills of Master Teachers teaching science were predominantly rated as Very High, indicating their competence in fostering supportive mentoring relationships and modeling effective teaching practices. Key skills such as support (4.39), initiative-taking (4.38), and confidence-building (4.35) highlight their ability to empower mentees and address challenges constructively. Managing/controlling (4.25) and demonstration/modeling (4.18) also received strong ratings, reflecting their effectiveness in guiding mentees on classroom dynamics and teaching techniques. Several skills, including conflict mediation (4.04), resource-bringing (4.15), trust/rapport-building (4.13), and diagnosing individual and school needs (4.19 and 4.11, respectively), were rated High. These results suggest proficiency in addressing specific mentoring challenges, though some areas, like confrontation and deeper trust-building, may benefit from further enhancement. Overall, the findings underscore the mentors' pivotal role in professional development and their ability to support mentees' growth comprehensively.

4. The level of technical assistance provided by mentors and received by mentees was consistently rated as High (3.41–4.20) across all areas, reflecting effective and beneficial mentoring practices. The preparation of daily lesson logs received the highest ratings, with scores of 4.11 from mentors and 4.10 from mentees, highlighting its critical role in organized and goal-oriented teaching. The assessment of individual performance, commitment, and review was also highly rated (4.08 for mentors, 4.04 for mentees), emphasizing its importance in identifying teaching strengths and areas for improvement. Assistance in developing instructional materials and conducting in-service training or Learning Action Cells (LACs) scored slightly lower (3.93 and 4.08 for mentors; 3.94 for both by mentees), suggesting these areas could benefit from more tailored support to maximize their impact. Overall, the results indicate a consistently high level of technical assistance, with mentors effectively supporting mentees in resource preparation and professional growth. However, further refinements in certain aspects could enhance the overall mentoring process.

5. The results show no significant relationship between the mentoring skills (general and specific) of highly proficient teachers teaching science and their demographic profiles, including length of service, educational attainment, and relevant training. The p-values for all factors exceed the 0.05 significance level, indicating that these characteristics do not notably influence the teachers' abilities in mentoring. This suggests that mentoring skills are likely driven by experience and professional development rather than demographic factors.

6. The technical assistance provided by Master Teachers is generally not significantly influenced by their demographic profiles, including length of service, educational attainment, and relevant training. The only exception is a significant relationship between age and assistance in developing instructional materials ($p = 0.032$), suggesting that older teachers may contribute more effectively in this area due to their experience. For other areas, such as lesson log preparation, performance assessment, and in-service training, no significant relationships were observed, indicating that these forms of assistance are consistently provided regardless of teacher demographics.

7. The results indicate a significant positive relationship between the technical assistance provided by highly proficient teachers and their mentoring skills. As teachers provide more technical assistance, their general mentoring skills (such as listening, interpersonal ease, and knowledge of educational content) and specific mentoring skills (such as initiative-taking, support, conflict mediation, and confidence-building) tend to improve. This suggests that the act of offering technical assistance enhances teachers' overall ability to mentor effectively.

8. The key problems faced by highly proficient teachers teaching science during mentoring are work overload and lack of time, suggesting that mentors struggle to balance their multiple responsibilities. Additional challenges include external duties, such as coaching , and negative attitudes from colleagues or administrators, indicating insufficient institutional support for mentoring. Unclear mentoring goals and vague structures for mentoring sessions reflect the need for clearer guidelines to improve mentoring effectiveness. Other issues include the lack of incentives for master teachers, mismatched teaching assignments, and personality

conflicts, all of which can disrupt the mentoring process. Additionally, inadequate administrative support and logistical challenges like physical proximity further hinder mentoring, emphasizing the importance of institutional and logistical support for successful programs.

Conclusions

Based from the findings revealed in the study, the following conclusions were drawn:

1. The profile of Master Teachers reveals that they possess substantial experience, advanced education, and a strong commitment to professional development. The majority hold master's degrees showcasing their dedication to continuous learning. All have attended relevant training, highlighting the role of professional development in enhancing their teaching and mentoring capabilities. These factors contribute to their success in mentoring and improving educational quality.

2. The results highlight the strong mentoring skills of Master Teachers teaching science, with high ratings in listening, interpersonal ease, educational content knowledge, and training. Their ability to create supportive and organized mentoring environments is evident, fostering effective professional growth among mentees.

3. Master Teachers excel in mentoring, with strong skills in support, initiative-taking, and confidence-building. They also effectively manage classroom dynamics and model teaching practices. While skills like conflict mediation and diagnosing needs are strong, areas like confrontation and trust-building could be improved. Overall, these teachers play a key role in mentee development.

4. The technical assistance provided by mentors and received by mentees was rated as High across all areas, indicating effective support. The preparation of daily lesson logs received the highest ratings, highlighting its importance in structured teaching. Performance assessment was also highly rated, underscoring its role in identifying strengths and areas for growth. While assistance in developing instructional materials and conducting in-service training received slightly lower ratings, the overall technical support was strong, with room for further improvement in certain areas.

5. There is no significant relationship between the mentoring skills of Master Teachers teaching science and their demographic profiles, such as length of service, educational attainment, and relevant training. Since the p-values for all factors exceed 0.05, it suggests that mentoring skills are more influenced by experience and professional development rather than demographic characteristics.

6. The technical assistance provided by Master Teachers is mostly unaffected by their demographic profiles. The only exception is age, which significantly influences assistance in developing instructional materials. Other areas, such as lesson log preparation and performance assessment, show no significant relationships.

7. The results show a significant positive relationship between the technical assistance provided by Master Teachers and their mentoring skills. As teachers offer more technical assistance, their general and specific mentoring skills, such as listening, support, and conflict mediation, improve, indicating that providing technical support enhances their overall mentoring effectiveness.

8. The main problems faced by Master Teachers teaching science in mentoring include work overload, lack of time, external duties like coaching, and negative attitudes from colleagues. Other issues include unclear mentoring goals, mismatched teaching assignments, personality conflicts, and inadequate administrative support, emphasizing the need for better institutional and logistical support.

Recommendations

In the light of the conclusions drawn, the following recommendations were offered:

1. Master Teachers should actively pursue continuous professional development, embrace a passion for teaching, and be open to taking on additional responsibilities. These efforts will not only enhance their teaching skills but also provide opportunities for career advancement, including promotion to higher positions.

2. Mentors should consistently apply both general and specific mentoring skills, while providing technical assistance to their mentees. This persistence will ensure effective support for the professional growth of less experienced teachers.

3. Encouraging mentors to prioritize tasks, manage time efficiently, and maintain a positive attitude toward their responsibilities will reduce common mentoring challenges. This will also help create a more productive and supportive environment.

4. To avoid excessive workloads, both mentors and mentees should develop proactive schedules, set clear time limits, and ensure that both parties are available and committed to mentoring sessions. This will help manage the demands placed on teachers and improve overall mentoring quality.

5. School principals should prioritize sending Master Teachers to seminars, training sessions, and professional activities to stay updated on educational developments. This will enhance their instructional competence and leadership capabilities.

6. Master Teachers should continue their education through graduate studies or other advanced courses that align with their specialization. This commitment will not only improve their instructional competence but also position them for leadership roles within the school system.

7. Schools should actively seek to mobilize resources, including modern instructional materials and equipment, to create an environment conducive to effective learning. This will significantly enhance the teaching and learning experience.

8. Master Teachers should be empowered to design and lead training programs for their colleagues, such as INSETs or seminars, focusing on enhancing teaching competence. This will help create a culture of continuous improvement within the school.

9. Schools should implement individualized development plans for their Master Teachers to systematically enhance both their instructional skills and leadership capabilities.

10. Effective monitoring and evaluation systems should be established to assess the implementation of teachers' Individual Performance Commitment and Review Forms (IPCRF). Regular assessment will ensure accountability and measure the impact of mentoring efforts.

11. Future research should focus on evaluating the effectiveness of the recommendations in enhancing instructional competence and leadership, allowing schools to refine their approaches based on data-driven insights.

12. Research should investigate the relationship between teacher mentoring practices and workload, exploring how excessive demands may negatively affect teachers' health and overall well-being. This will help identify strategies to mitigate stress and burnout.

13. Schools should organize regular forums or focus group discussions for highly proficient teachers to address their developmental needs, share challenges, and discuss best practices. These gatherings will foster a collaborative environment aimed at improving teaching practices and enhancing student outcomes.

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