Competence of DepEd Elementary Mathematics Teachers and Learners` Academic Performance of Grade 5 Pupils

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ABSTRACT

This quantitative descriptive-correlational study looked at the academic achievement of Grade 5 learners in the northern districts of the Schools Division of Eastern Samar and the proficiency of DepEd primary math teachers. A competence questionnaire was completed by 37 Grade 5 Mathematics teachers from the Sulat, Taft, and Can-avid districts using purposive sampling, and the Mean Percentage Scores in Mathematics for the schools were used as performance data for the learners. Both correlation analysis and descriptive statistics were used. The findings indicated that while Grade 5 learners achieved a satisfactory mean MPS of 83.89, teachers' proficiency in active learning, active teaching, classroom management, leadership, and technology was typically high to very high. However, there was no significant correlation found between learners' performance in mathematics and teacher competence aspects. The study suggests further professional development, improved technology integration, sufficient learning resources, and additional research on other performance determinants after concluding that other criteria might better explain achievement.

Keywords: Teacher Competence, Mathematics Achievement, Grade 5 Learners, DepEd Elementary Schools, Eastern Samar

INTRODUCTION

Elementary education is a critical foundation for national development, and mathematics is central in nurturing learners' logical, analytical, and problem-solving skills. In the Philippines, the Department of Education

(DepEd) is mandated to provide quality basic education, with the competence of elementary mathematics teachers playing a vital role in ensuring effective instruction. The academic performance of Grade 5 learners in mathematics serves as a key indicator of instructional quality and of learners' readiness for more advanced studies.

However, international assessments reveal persistent difficulties in mathematics. Studies report that many learners struggle with core mathematical concepts, reasoning, and problem-solving, a concern reflected in the Programme for International Student Assessment (PISA), where a large proportion of participating countries, including the Philippines, perform below the OECD average in mathematics. Filipino learners' low placement in PISA mathematics raises serious questions about the effectiveness of current teaching practices and support systems in basic education.

A wide body of literature underscores the importance of teacher competence—particularly in active learning, active teaching, classroom management, leadership, and technological integration—in improving learners' engagement and achievement in mathematics. Yet, despite evidence that teacher qualifications, pedagogical skills, and classroom practices influence learner outcomes, there remains a gap in localized studies that examine specific dimensions of competence among DepEd elementary mathematics teachers and how these relate to the actual academic performance of Grade 5 learners, especially in rural contexts such as the northern districts of the Schools Division of Eastern Samar. This gap limits the ability of school leaders and policymakers to design targeted interventions grounded in local data.

Statement of the Problem

This study examined the connection between Grade 5 learners' academic achievement in primary schools in the northern districts of the Schools Division of Eastern Samar and the proficiencies of DepEd elementary mathematics teachers. It specifically aimed to respond to the following queries:

1. What is the level of competence of DepEd Elementary Mathematics teachers among elementary schools of the northern districts in the Schools Division of Eastern Samar in terms of:

1.1 active learning

1.2 active teaching

1.3 classroom management

1.4 administrative/leadership competence

1.5 technological competence

2. What is the level of academic performance of Grade 5 learners in elementary schools of the northern districts in the Schools Division of Eastern Samar?

3. Is there a significant relationship between the level of competence of DepEd Elementary Mathematics teachers among elementary schools and the level of academic performance of Grade 5 learners in elementary schools of the northern districts in the Schools Division of Eastern Samar?

METHOD

The study examined the relationship between Grade 5 learners' academic performance and the competences of DepEd elementary mathematics teachers using a quantitative descriptive-correlational research design. It was carried out in public elementary schools in the districts of Sulat, Taft, and Can-avid in the northern part of Eastern Samar's Schools Division. Purposive sampling was used to select 37 Grade 5 Mathematics teachers as respondents. The teachers had to be willing to participate, be permanent teachers stationed in the northern districts, and be teaching Grade 5 Mathematics. Non-Math teachers, non-permanent teachers, and teachers from outside the northern districts were not included.

The primary study tool used to test teaching competences in terms of active learning, active teaching, classroom management, leadership competence, and technical competence was a survey questionnaire modified from Simbulas et al. (2023). High reliability was shown by the tool's reported reliability coefficient of 0.85 and 5-point Likert scale. Since information was taken from a published study, no additional validation was done. DepEd's grade scale (Outstanding to Did Not Meet Expectations) was used to classify the academic performance of Grade 5 learners based on the schools' Mean Percentage Score (MPS) in Mathematics. Teachers were given printed surveys as part of the data gathering process, and the participating schools' Grade 5 Mathematics MPS records were retrieved.

For data analysis, responses were tabulated, tallied, and summarized using descriptive statistics such as mean and standard deviation to describe the level of teacher competency and learners' academic performance. Correlation analysis was then employed to test the relationship between the different domains of teacher competence and the academic performance of Grade 5 learners, using a significance level of 0.05. Ethical standards were strictly observed in accordance with the Data Privacy Act of 2012 (RA 10173); the study underwent ethics review and received clearance (Ref. No. 0205-24-GS), informed consent was obtained from all participants, confidentiality and anonymity were assured, participation was voluntary with the right to withdraw at any time, and the researcher committed to truthful reporting, data integrity, and avoidance of plagiarism, data fabrication, or any form of misconduct.

RESULT AND DISCUSSION

The assessment of the level of competence among DepEd elementary mathematics teachers in terms of active learning has yielded a significant and encouraging result, as indicated by the grand mean of 4.514, interpreted as "Very High.", Table 1. This outcome underscores the commendable proficiency of teachers in employing active learning strategies within the mathematics classroom setting. The interpretation "Very High" suggests that most surveyed teachers consistently demonstrated a superior understanding and application of active learning techniques. Active learning, characterized by engaging learners in participatory and interactive methods, allows for a dynamic and immersive learning as seen in experience.

Active learning, which involves participatory and interactive approaches, is now fundamental in modern teaching, especially in the field of mathematics education. Research has consistently shown that active learning strategies significantly improve student engagement and comprehension. Freeman et al. (2014) proved that active learning methods result in better learner performance and lower failure rates compared to traditional lecture-based methods. The assessment results indicate a "Very High" level, suggesting that the majority of surveyed teachers consistently exhibited a strong understanding and implementation of these effective teaching methods. The importance of continuous professional development for teachers is crucial for the effective use of active learning techniques. According to Desimone's research in 2009, sustained and job-integrated professional development is essential for enhancing teaching methods and learner performance. Based on the evaluation results, it would be wise to invest in specific training initiatives to improve teachers' skills in active learning approaches

Table 1. Level of competence of DepEd Elementary Mathematics teachers in terms of Active Learning

Statement	**Mean**	**Interpretation**
Showing respect to students in their communications with them.	4.51	Very High
Encouraging students to participate in the discussion.	4.68	Very High
Facilitating learning activities that help students construct explanations/solutions.	4.57	Very High
Providing opportunities for hands-on practice so that students can apply learned knowledge to the real-world.	4.49	High
Providing additional resources that encourage students to go deeper into the content of the course.	4.43	High
Encouraging students to share their knowledge and expertise with the learning community	4.54	Very High
Encouraging student-generated content as appropriate.	4.57	Very High
Encouraging students to interact with each other by assigning team tasks and projects, where appropriate.	4.62	Very High
Including group/team assignments where appropriate	4.43	High
Using peer assessment in their assessment of student work, where appropriate	4.3	High
Grand Mean	**4.514**	**Very High**

The effectiveness of teachers using active learning methods has significant effects on learners' math learning results. According to Prince (2004), active learning approaches lead to better memory retention and a more profound grasp of concepts among learners. Through the creation of an engaging and interactive learning environment, active learning promotes a supportive classroom atmosphere where learners are motivated to be in charge of their own learning process.

The level of competence of DepEd elementary mathematics teachers in terms of active teaching, as indicated in Table 2 by a grand mean of 4.374, suggests a high degree of proficiency in this instructional approach.

Table 2. Level of competence of DepEd Elementary Mathematics teachers in terms of Active Teaching

Statement	Mean	Interpretation
Showing being able to provide clear, detailed feedback on assignments and exams that enhances the learning experience	4.51	Very High
Being able to provide prompt, helpful feedback on assignments and exams that enhances learning.	4.27	High
Being able to show caring and concern that students are learning the course content	4.54	Very High
Using appropriate strategies to manage the online workload.	4.14	High
Helping keep the course participants on task.	4.41	High
Grand Mean	**4.374**	**High**

Active teaching methods involve engaging learners in the learning process through hands-on activities, group discussions, problem-solving tasks, and other interactive techniques. A grand mean above 4 indicates that, on average, teachers demonstrated a strong ability to employ active teaching strategies effectively in their classrooms.

Active teaching is recognized for its ability to promote deeper understanding, critical thinking, and retention of mathematical concepts among learners (Hiebert et al., 2017). Teachers who effectively employ active teaching methods create dynamic and stimulating learning environments where learners are actively involved in constructing their knowledge and making connections between mathematical concepts and real-world applications.

The high level of competence demonstrated by DepEd elementary mathematics teachers in active teaching aligns with research highlighting the benefits of this approach. Studies have shown that active teaching methods enhance student engagement, motivation, and academic performance in mathematics (Freeman et al., 2014). By encouraging active participation and collaboration among learners, teachers facilitate the development of problem-solving skills and mathematical reasoning abilities essential for success in mathematics and beyond.

The result on the survey on level of competence of Mathematics Teachers in terms of classroom management indicate that DepEd elementary mathematics teachers demonstrated a high level of competence in classroom management, as evidenced by a grand mean of 4.47 seen in Table 3. Classroom management encompasses the strategies and techniques teachers use to create a conducive learning environment, maintain discipline, and maximize instructional time. A grand mean of

4.47 suggests that, on average, teachers had excelled in effectively managing their classrooms to support student learning and engagement.

Table 3. Level of competence of DepEd Elementary Mathematics teachers in terms of Classroom Management

Statement	Mean	Interpretation
Effectively managing the course communications by providing a good model of expected behavior for all course communication	4.46	High
Helping students resolve conflicts that arise in collaborative teamwork.	4.57	Very High
Being able to show caring and concern that students are learning the course content	4.51	Very High
Being able to identify areas of potential conflict within the course.	4.38	High
Resolving conflicts when they arise in teamwork/group assignments.	4.43	High
Grand Mean	4.47	High

Effective classroom management is essential for creating a positive and productive learning atmosphere where learners feel safe, motivated, and focused on learning (Marzano et al., 2003). Teachers who possess strong

classroom management skills can establish clear expectations, routines, and procedures, minimizing disruptions and maximizing instructional time. By maintaining a well-organized and structured learning environment, teachers can optimize opportunities for student participation, collaboration, and academic achievement.

The high level of competence demonstrated by DepEd elementary mathematics teachers in classroom management aligns with research highlighting its importance in promoting learner achievement. Studies have shown that effective classroom management is associated with improved student behavior, academic engagement, and achievement outcomes (Emmer & Sabornie, 2015). When teachers establish a supportive and structured learning environment, learners are more likely to actively participate in lessons, remain on task, and develop positive attitudes towards learning mathematics.

The results posted in Table 4 indicate that DepEd elementary mathematics teachers exhibit a high level of competence in leadership, as evidenced by a grand mean of 4.395.

Table 4. Level of competence of DepEd Elementary Mathematics teachers in terms of Leadership Competence

Statement	**Mean**	**Interpretation**
Clearly communicating expected student behaviors.	4.46	High
Adhering to the school's policies specially the Data Privacy Act of 2012 or RA 10173.	4.41	High
Being proficient in the chosen learning management system (LMS).	4.38	High
Making grading visible for student tracking purposes.	4.46	High
Integrating the use of technology that is meaningful and relevant to students.	4.27	High
Grand Mean	**4.395**	**High**

Leadership competence refers to the ability of teachers to effectively lead and guide their learners towards academic success while fostering a positive learning environment. A grand mean of 4.395 suggests that, on average, teachers demonstrate strong leadership qualities and skills that contribute to the overall effectiveness of mathematics instruction

Effective leadership among DepEd elementary mathematics teachers is essential for facilitating student learning and achievement. Teachers who demonstrate strong leadership competence can inspire, motivate, and empower their learners to reach their full potential in mathematics (Hallinger & Murphy, 2012). Through their leadership, teachers establish clear goals, expectations, and standards for academic excellence, guiding learners towards success.

Moreover, leadership competence encompasses various dimensions, including instructional leadership, relationship-building, and decision-making (Leith wood & Riehl, 2003). Teachers who excel in instructional leadership demonstrate expertise in designing and delivering high-quality mathematics instruction that is rigorous, engaging, and aligned with curriculum standards. They employ effective teaching strategies, differentiate instruction to meet diverse student needs, and monitor student progress to ensure continuous improvement.

The results of the study reveal that DepEd elementary mathematics teachers exhibited a high level of competence in technological competence, as indicated by a grand mean of 3.93 from Table 5.

Technological competence refers to teachers' ability to effectively utilize technology tools and resources to enhance mathematics instruction and student learning experiences. With a grand mean of 3.93, it suggests that, on average, teachers possessed strong proficiency in integrating technology into their teaching practices, thereby contributing to the enhancement of mathematics education.

In today's digital age, technology plays a crucial role in transforming teaching and learning experiences, particularly in the field of mathematics (Mishra & Koehler, 2006). Technological competence among teachers enables them to leverage various digital tools, software applications, and online resources to create engaging and interactive learning environments that cater to diverse student needs and preferences.

Table 5. Level of competence of DepEd Elementary Mathematics teachers in terms of Technological Competence

Statement	**Mean**	**Interpretation**
Evaluate content-specific technology for teaching and learning	4.08	High
Align content with pedagogical approaches and appropriate technology.	4.11	High
Model approaches for aligning the content being taught with appropriate pedagogy and content.	4.16	High
I communicate using online tools.	3.65	High
I design instruction using online tools.	3.65	High
Grand Mean	**3.93**	**High**

DepEd elementary mathematics teachers with high levels of technological competence are adept at selecting and integrating appropriate technology tools into their instructional practices (Ertmer et al., 2012). They utilize digital platforms, such as educational software, interactive whiteboards, multimedia presentations, and online simulations, to illustrate abstract mathematical concepts, facilitate hands-on learning experiences, and promote active student engagement.

The summary table indicates a high level of competence among DepEd elementary mathematics teachers, with a grand mean of 4.3366 as reflected in table 6. This finding suggests that, on average, teachers possess strong proficiency across various domains related to mathematics instruction. A high level of competence is indicative of teachers' ability to effectively plan, deliver, and assess mathematics lessons, as well as create engaging and supportive learning environments for their learners

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Table 6. Summary table on the level of competence of DepEd Elementary Mathematics Teachers

Statement	**Mean**	**Interpretation**
Active Learning	4.514	Very High
Active Teaching	4.374	High
Classroom Management	4.47	High
Leadership Competence	4.395	High
Technological Competence	3.93	High
Grand Mean	**4.3366**	**High**

The overall high level of reported teacher competence indicates that the participating teachers rated themselves highly across the assessed domains. However, the results do not provide sufficient evidence to attribute these competence levels to particular training programs or professional development initiatives.

Moreover, the high level of reported competence may reflect teachers' professional knowledge and practices; however, the present study did not directly measure teachers' training histories or professional-development participation, so such factors should not be treated as established explanations for the findings.

Additionally, organizational support, instructional resources, and curriculum guidance may be relevant contextual factors. These factors were not directly measured in the present study and therefore are identified only as possible areas for future investigation.

The results of the assessment of the academic performance of Grade 5 learners in the northern districts of the Schools Division of Eastern Samar are presented in Table 7. The school-level Mathematics MPS data represented 37 schools and yielded an average MPS of 83.89.

Table 7. Level of academic performance of Grade 5 learners in elementary schools of the northern districts in the Schools Division of Eastern Samar

Grade	**Frequency**	**percent**	**Interpretation**
	(N=37)		
90 – 100	1	2.7	Outstanding
85 – 89	11	29.73	Very Satisfactory
80 – 84	14	37.84	Satisfactory
75 – 79	7	18.92	Fairly Satisfactory
Below 75	4	10.81	Did not Meet Expectation
Average	**83.89**		

The average MPS of 83.89 in Grade 5 Mathematics falls within the Satisfactory category based on the classification presented in Table 7. This result describes the academic performance of the participating learners and should not, by itself, be interpreted as evidence of the effectiveness of particular instructional strategies.

The average MPS provides a description of learner performance in Mathematics in the participating schools. However, the MPS alone does not establish the quality or effectiveness of mathematics instruction or curriculum implementation.

The test conducted to examine the relationship between teacher competence and Grade 5 learners' academic performance yielded non-significant results. The reported p-values (.816, .543, .868, .813, and .297) were all greater than the .05 level of significance. Therefore, the null hypothesis was not rejected, indicating that there was no statistically significant relationship between the assessed domains of teacher competence and Grade 5 learners' academic performance.

The finding that the level of competence of DepEd Elementary Mathematics teachers was not significantly related to the academic performance of Grade 5 learners may be explained by factors such as limited variation in teacher-competence ratings, the use of school-level performance averages, and other learner- or school-related factors that were not measured in the study.

Detail could give valuable insights into the complex relationship between teacher skills and learner achievement in math.

The result indicates that, within the conditions of this study, there was no statistically significant relationship between teacher competence and Grade 5 learners' academic performance. This finding does not establish that teacher competence has no role in learning; rather, it indicates that the measured variables did not show a statistically significant association in the participating schools.

Possible factors influencing the academic performance of Grade 5 learners in mathematics may include the effectiveness of instructional practices, the quality of curriculum implementation, the availability of instructional resources, student engagement levels, and individual student characteristics. These factors, among others, may play a more substantial role in shaping learners' academic outcomes compared to the specific competencies of their mathematics teachers.

Table 8. Test on significant relationship between the level of competence of DepEd Elementary Mathematics teachers among elementary schools and the level of academic performance

Level of Competencies	Academic Performance	r-value	p-value	Decision	Interpretation
Active Learning		-0.04	0.816	Fail to reject H_0	Not significant
Active Teaching		-0.103	0.543	Fail to reject H_0	Not significant
Classroom Management	Mean = 83.89 (Very Satisfactory)	-0.028	0.868	Fail to reject H_0	Not significant
Leadership Competence		0.04	0.813	Fail to reject H_0	Not significant
Technological Competence		0.176	0.297	Fail to reject H_0	Not significant

It is essential to interpret these findings within the broader context of educational practice and policy. While the teacher competence undoubtedly play a crucial role in student learning, this particular study suggests that, at least in the case of Grade 5 mathematics performance, other factors may be more influential. Therefore, educational stakeholders should consider a multifaceted approach to improving learner achievement, encompassing not only teacher professional development but also curriculum enhancement, student support services, and school-wide interventions aimed at fostering a positive learning environment conducive to academic success.

Furthermore, future research endeavors may seek to explore additional variables or factors that could contribute to the academic performance of Grade 5 learners in mathematics. By gaining a deeper understanding of the complex interplay between various determinants of learner achievement, educators and policymakers can better tailor interventions and initiatives to support the holistic development of learners and enhance overall academic outcomes in elementary mathematics education.

DISCUSSION

This study examined the academic performance of Grade 5 learners in the northern districts of the Schools Division of Eastern Samar in relation to the competence of DepEd elementary mathematics teachers. The results showed that learners had a satisfactory average MPS, while teachers reported high to very high levels of competence across the assessed domains. No statistically significant correlation was found between the measured domains of teacher competence and learners' academic performance.

Two patterns emerge from the findings. First, teachers reported high to very high competence in active learning, active teaching, classroom management, leadership, and technological competence. Second, the school-level Mathematics performance data showed an overall satisfactory average MPS of 83.89. The absence of statistically significant correlations indicates that the measured teacher-competence domains were not significantly associated with the school-level performance measure in this sample attitudes for successful math instruction. Second, while many schools achieve "Satisfactory" to "Very Satisfactory" categories in mathematics, the overall mean percentage score of learners indicates satisfactory performance. The surprising lack of a substantial association between these two patterns indicates that, even when instructors are performing at admirable levels of competence, there are other factors than teachers that influence test score variation. To put it another way, having qualified teachers seems to be a necessary but insufficient prerequisite for optimizing math achievement.

Several limiting factors can be used to explain why there was no statistically meaningful association. There was little variation to link with learner outcomes because the majority of teachers were clustered in the "High" to "Very High" range of ability; this phenomenon is commonly referred to as a ceiling or compression effect. Furthermore, learner performance was averaged at the school level, which would have obscured individual variances, and competency was mostly assessed by self-report, which may be impacted by variations in self-awareness or social desirability. More significantly, significant factors that were not measured but probably have a significant impact on accomplishment include kids' prior knowledge, home support, socioeconomic position, attendance, language background, and attitudes toward mathematics. Even highly skilled teachers may have less

of an effect on standardized test scores due to system-level limitations including class size, curriculum pacing, and resource availability.

These findings suggest that efforts to improve mathematics achievement should not focus exclusively on teacher competence. Professional development may be complemented by learner support, appropriate instructional resources, assessment practices, curriculum implementation, and school- and community-level support. Because these additional factors were not directly measured in the present study, they should be examined in future research rather than treated as established determinants of learner performance.

Viewed in the context of continuing concerns about mathematics achievement, the findings add local evidence that teacher competence alone may not explain differences in school-level Mathematics performance. The study therefore supports a broader perspective in which learner, home, school, and instructional factors may be considered together, while recognizing that the present study did not directly measure all of these factors.

These findings point to the value of a broader approach to improving mathematics achievement. Teacher development may be complemented by learner support, parental and community involvement, appropriate educational resources, and school-based interventions. Future studies may strengthen the evidence by linking individual learners with their teachers, examining additional learner and contextual variables, and using multiple sources of evidence such as interviews and classroom observations.

CONCLUSION

After a thorough survey that assessed the relationship between the competence of DepEd elementary mathematics teachers and the academic performance of Grade 5 learners, the following are the conclusions of this research:

1. The level of competence of DepEd elementary mathematics teachers revealed a high grand mean of 4.3366, indicating strong proficiency across all domains assessed. Regarding active learning, teachers demonstrated a "Very High" level of competence, as evidenced by a grand mean of 4.514. in active teaching, teachers exhibited a high level of competence, with a grand mean of 4.374., on classroom management and leadership competence result rebelieved grand mean of 4.47 and 4.395 respectively, then technological competence, reflected by a grand mean of 3.93.This overall high level of competence suggests that DepEd's training programs and professional development initiatives are effectively enhancing the skills and abilities of elementary mathematics teachers ensuring quality education delivery.
2. The level of academic performance of Grade 5 learners in elementary schools of the northern districts in the Schools Division of Eastern Samar yielded an average Mean Percentage Score (MPS) of 83.89 in Grade 5 Mathematics. This high MPS indicates that the instructional strategies and educational support systems in place are effectively fostering a strong understanding of mathematical concepts among Grade 5 learners contributing to their academic success.
3. The p-values resulting from the test were discovered to be below the predetermined significance level of .05. As a result of this statistical analysis, the null hypothesis cannot be dismissed. Therefore, there is no significant relationship between level of competence of Deped Elementary Mathematics teachers and the level of academic performance of Grade 5 learners in elementary schools of the northern districts in the Schools Division of Eastern Samar.

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