Mathematical Quotient and Teaching Scholasticness of Teachers in Selected Schools' Divisions of Central Mindanao

Benjie G. Bignayan, Rey S. Fuentebilla

Sultan Kudarat State University, Philippines

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ABSTRACT

This study aimed to examine the mathematical quotient and teaching scholasticness of teachers in selected schools in Central Mindanao. A descriptive-correlational method was utilized, involving a diagnostic test in mathematics and a classroom observation tool to assess the teaching scholasticness of educators. Data analysis employed various statistical techniques, including frequency, percentage, mean, standard deviation, Pearson r correlation, and regression analysis. Findings revealed that most mathematics teachers were male and held entry-level teaching positions. Their mathematical quotient was generally high, with strong proficiency in statistics, algebra, and geometry, while trigonometry showed slightly lower performance. Teachers also demonstrated outstanding teaching scholasticness, particularly in curriculum planning, assessment, and pedagogy, though a somewhat lower performance was observed in managing diverse learners and classroom environments. There is no significant relationship between teachers' gender, teaching position, or coordinatorship and their mathematical quotient or scholasticness. Instead, mathematical proficiency appeared to be influenced more by individual skills, training, and experience. However, a significant relationship was observed between teachers' mathematical quotient and their teaching scholasticness, suggesting that strong content knowledge contributes to more effective teaching.

Keywords: Mathematical Quotient, Teaching Scholasticness, Teacher Proficiency, Classroom Observation, Teacher Assessment

INTRODUCTION

The mathematical quotient includes all aspects of expertise, competence, and knowledge of teachers in mathematics content. The mathematical quotient cannot be accomplished once. Still, teachers require training, the provision of support resources, and the acquisition of pedagogy knowledge to understand the lessons' different contents. Teachers' abilities to teach mathematics curriculum determine the quality of their mathematical quotient and perhaps affects their teaching scholasctiness.

The mathematical quotient of teachers is one of the most important factors affecting learners' progress (Hattie & Zierer, 2017). In addition to teaching and understanding mathematics, math teachers instruct students on how to manage and enhance their learning in the classroom (Mohamed et al., 2023). Effective teaching-learning in the classroom requires a high level of teacher mathematical quotient, which shows knowledge and understanding of the content.

Several studies, such as that of Al-Shammari and Al-Arini (2019), confirmed that 60% of the learning process is influenced by teachers' performance in the classroom, indicating that one of the factors that contribute to the success of any math class starts with the teachers in the first stage. Teachers acquire a high level of mathematical quotient to teach effectively and access appropriate mathematical and content knowledge like algebra, calculus, and geometry (Abdioglu et al., 2021). However, limited literature and studies have accounted relative to the teaching scholasticness of teachers in Mathematics.

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Moreover, the Department of Education (DepEd) has emphasized the importance of continuing all ongoing class observations using the standard classroom observation tool to ensure the delivery of high-quality basic education to all learners (Asio & Jimenez, 2020). Classroom observations are crucial in enhancing teachers' performance through various assessment parameters, which are essential for achieving quality education (Barrogo, 2020).

Learners' accomplishment in mathematics has been declining over the years, as indicated by the results from PISA and TIMSS (Aguhayon et al., 2023). Research has highlighted Filipino students' poor or unsatisfactory performance in mathematics (Azucena et al., 2022; Pentang et al., 2020). Furthermore, the National Achievement Test (NAT) mean percentage score in Mathematics fell below the established standards (DepEd, 2019).

While the connection between teacher knowledge and student learning is well documented, there remains a gap in literature explicitly linking teachers' mathematical quotient with their "teaching scholasticness." In this study, the term scholasticness refers to a teacher's demonstrated academic rigor, intellectual engagement, instructional depth, and commitment to evidence-based teaching practices. Though not commonly used in mainstream educational research, the concept aligns closely with established frameworks for teacher professional competence and academic teaching effectiveness.

According to Shulman (1986), effective teaching requires not only content knowledge but also pedagogical content knowledge (PCK)—the integration of subject expertise and the ability to convey it in an accessible and meaningful way. Scholasticness, as applied here, draws upon this idea and further includes a teacher's capacity to plan, implement, and assess learning in ways that reflect scholarly teaching standards (Trigwell & Shale, 2004). Trigwell et al. argue that a scholastic approach to teaching incorporates critical reflection, disciplinary thinking, and a continuous pursuit of improvement grounded in academic evidence.

Hill, Rowan, and Ball (2005) found a positive correlation between teachers' mathematical knowledge for teaching (MKT) and student achievement in mathematics. Their findings suggest that teachers with deeper subject knowledge were more adept at explaining concepts clearly and responding to student needs. Similarly, Baumert et al. (2010) highlighted that teacher content knowledge, especially when combined with pedagogical knowledge, significantly influences instructional quality and student progress, particularly in secondary mathematics.

Furthermore, Kreber (2002) emphasized that scholarly teaching is defined by the intention to improve teaching effectiveness through systematic inquiry and understanding, rather than relying solely on experience or intuition. Thus, in this study, scholasticness is conceptualized as a measurable quality encompassing instructional sophistication, curricular coherence, and reflective practice—all of which are essential for high-quality mathematics teaching.

However, no studies have cited the effect of the teachers' mathematical quotient and their teaching ability in Mathematics. The lack of teacher knowledge and proficiency and the mathematics content expertise contribute to pedagogical content learning related to teaching mathematics. In the premise of the above research gaps and problems, this study aims to assess teachers' mathematical quotient and their teaching scholasticness. Moreover, this study determines the relationship between the teachers' mathematical quotient level and their teaching scholasticness. The capacity of the researcher to conduct this study answered the research gaps and contributed to the existing literature and studies.

This study acknowledges several key limitations. These include a potentially small or regionally limited sample size, which may affect generalizability, possible observer bias during classroom evaluations, and the use of correlational methods, which do not establish causation. Addressing these limitations openly enhances the study's credibility and transparency. Future research should consider longitudinal designs, diverse educational settings, and multi-informant evaluation strategies to validate and expand upon the findings.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

This study situates itself within the broader discourse on teacher quality and learner outcomes, while addressing specific gaps in the literature regarding the mathematical quotient and its practical instructional impact.

Statement of the Problem

This study determined the mathematical quotient and teaching scholasticness of teachers in selected schools' divisions of Central Mindanao. It answered the following questions:

1. What are the profiles of the teachers in terms of:

- gender;
- current teaching positions, and;
- number of coordinatorships?

2. What is the extent of the mathematical quotient of teachers relative to:

- algebra;
- geometry;
- trigonometry; and
- statistics?

3. What is the extent of teaching scholasticness of teachers in terms of:

- content knowledge and pedagogy;
- learning environment & diversity of learners; and
- curriculum and planning & assessment and reporting?

4. Is there a significant relationship between the teachers' profile and the teachers' mathematical quotient?

5. Is there a significant relationship between the profile of teachers and their teaching scholasticness?

6. Is there a significant relationship between the mathematical quotient of teachers and their teaching scholasticness?

METHODOLOGY

Research Design

This investigation used the descriptive-correlational method. According to Salaria (2012), descriptive research is obtaining data regarding current circumstances or conditions to describe and interpret them. This approach involves more than just tallying data; it also involves appropriate analysis, interpretation, comparisons, and discovering patterns and connections. The present study intends to describe teachers' mathematical quotients and teaching skills.

Also, a statistical evaluation technique called correlation analysis examines how strongly two continuous variables are related. This can be applied to the profiles of teachers and their mathematical quotients, the mathematical quotients of teachers and their teaching scholastics, and the profiles of teachers and their teaching scholastics.

Respondents of the Study

The researcher utilized the mathematics teachers who graduated from Sultan Kudarat State University and were regular permanent teachers in Sultan Kudarat, Tacurong City, and South Cotabato Divisions. The

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

researcher included the Mathematics teachers who were employed from 2017-2022. In this study, 40 respondents were considered and responded to participate in the research study. Table 1 presents the distribution of respondents.

Table 1. Distribution of Respondents

No	Division	Mathematics Teachers
1.	Sultan Kudarat	25
2.	South Cotabato	13
3.	Tacurong City	2
	Total	**40**

Research Instruments

The study utilized a researcher-made diagnostic test in Mathematics and a classroom observation tool for teaching scholastics. It is composed of three parts: part 1, part 2, and part 3.

Part 1 was a checklist form that gathered data on the profile of mathematics teachers. It has three indicators: gender, current teaching positions, and the number of coordinatorships.

Part 2 was a researcher-made diagnostic test that gathered data on the teachers' mathematics quotient. The tool was based on the mathematics curriculum guide. It was a 50-item test that assessed algebra, geometry, trigonometry, and statistics competencies.

Part 3 determined the teaching scholasticism of mathematics teachers. A checklist form was used based on the classroom observation tool (COT). The instrument uses a 5-Likert scale, where 5 corresponds to outstanding, 4 to very satisfactory, 3 to satisfactory, 2 to unsatisfactory, and 1 to poor.

Validity and reliability testing were conducted to ensure that the instrument was acceptable. Six (6) professionals recognized as experts in test construction and educational management verified the study instruments. Scale content validation (S-CVI) and item content validation (I-CVI) indices were calculated. The researcher employed an appropriate CVI of 0.83 (Yosuff, 2019). However, a reliability test was conducted using the pilot test data.

After the second set of research instruments was validated, the reliability test was conducted through a test-retest method. In the conduct of the test-retest method, a diagnostic test was subjected and administered twice to the same respondents with the time interval between the conduct of two tests. A stronger correlation between the results of the two administered tests shows greater test-retest reliability or chronological stability. Furthermore, test-retest reliability is interpreted under the presumptions that the two administrations were identical and independent and that teachers' performance remains constant throughout time (Geisinger, 2015).

The correlation coefficient value (r) was used to ascertain the replies' dependability and measure the measuring device's internal consistency or homogeneity. It also provided the foundation for the test instrument's acceptability. For the test created by the researcher, the calculated reliability coefficient was 0.90, meaning "Very High Reliability." The following scale was used to interpret the reliability of the researcher-made instrument.

Data Collection and Analysis

After finding out that the research instrument was valid and reliable, the Dean of Graduate School's approval was secured. Subsequently, upon securing such approval, a letter request was forwarded to the Schools Division Superintendents of Sultan Kudarat, Tacurong City, and South Cotabato for approval. With the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

consent of the Schools Division Superintendents, a similar letter was drafted and given to the Secondary School Principals for information. Once informed, the distribution of the research instruments to the respondents commenced.

The respondents were given one hour to answer the researcher-made test face to face. When they completed all the items, the researcher retrieved the research instrument. After retrieval, data was checked, encoded, organized, and presented appropriately using tables or charts. The use of the MS Excel application was maximized in the data analysis.

RESULTS AND DISCUSSION

This chapter presents the results, analysis, and interpretation of the data collected to address the study's objectives. The findings are organized in the following tables, as well as corresponding discussions and explanations.

Profile of Teachers

Table 2. Profile of Teachers Based on their Gender

Gender	Frequency	Percentage
Male	21	52.50%
Female	19	47.50%
Total	**40**	**100.00**

Table 2 presents the gender profile of teachers. As revealed, 21 or 52.50% of the respondents are male, while 19 or 47.50% are female. This means that most of the teacher respondents majoring in Mathematics are male. Male teachers in the Mathematics specialization outranked female teachers.

The findings are inconsistent with the study of Salvan and Hambre (2020). According to the demographic profile, there are more female teachers than male teachers (67% vs. 33%), 50% of whom are between the ages of 27 and 32, and most of them have been teaching for 22–26 years, but most of whom have only taught Earth and space for only 1-4 years (66.%). Additionally, half of the teachers have attended between 27 and 32 seminars and training sessions, and the majority (66.7%) are working toward a master's degree.

Table 3. Profile of Teachers Based on their Teaching Position

Teaching Position	Frequency	Percentage
Teacher I	26	65.00%
Teacher II	9	22.50%
Teacher III	1	2.50%
Special Science Teacher I	4	10.00%
Total	**40**	**100%**

Table 3 shows the profile of teachers in terms of teaching positions. As presented, 26, or 65%, are in Teacher I. Meanwhile, 9, or 22.50%, are in Teacher II. However, 4, or 10%, are in Special Science Teacher I, and 1, or 2.50%, are in Teacher II. The result implies that most Teachers specializing in mathematics hold a Teacher I or entry-level position in the Department of Education.

The number of teachers with the academic rank of Teacher 1 was higher. The degree of professional demographic characteristics of teachers was explained in terms of the number of seminars and trainings they

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

attended, the research they presented, the articles they published, and the books they published (Francsico, 2020).

Table 4. Profile of Teachers Based on their Coordinatorship

Coordinatorship	Frequency	Percentage
0	7	17.50%
1	19	47.50%
2	11	27.50%
3	3	7.50%
Total	**40**	**100%**

Table 4 presents the profile of teachers based on their coordinatorship. As indicated, 19 or 47.50% have 1 coordinatorship. Meanwhile, 11 or 27.50% have two coordinatorships, 7 or 17.50% of the teachers have no coordinatorship, and 3 or 7.50% have 3 coordinatorships. The results indicate that most of the teachers have only 1 coordinatorship because, at present, the Department of Education already has non-teaching personnel handling the ancillary services.

It notably represents teachers early in their careers. It highlights teachers' participation in supplementary services and encourages them to complete the survey. The study's conclusions recognize the auxiliary services that new teachers may experience. The high frequency in the Teacher I category indicates emerging support networks and professional development programs (Tutor & Elbanbuena, 2024). The growing amount of administrative work placed on teachers is one important contributing factor.

Mathematical Quotient of Teachers

Table 5. Extent of the Mathematical Quotient of Teachers

Mathematical Quotient	Mean	SD	Percentage	Verbal Description
Algebra	11.20	1.56	86.15	High
Geometry	10.45	1.06	87.08	High
Trigonometry	10.43	1.17	80.19	Fairly High
Statistics	10.83	1.13	90.21	Very High
Overall Mean	**10.73**	**1.23**	**85.91**	**High**

Table 5 reveals teachers' mathematical quotients relative to the curriculum standards of algebra, geometry, trigonometry, and statistics. In general, the overall mathematical quotient of teachers is high, with a mean of 10.73 (SD=1.23), and 85.91% of the test items were answered correctly. As shown, among the mathematics curriculum standards, teachers possess a very high level of content in statistics, with a mean of 10.83 (SD=1.13). This comprises 90.21% of the correct answers.

Algebra appears to have a high level of content, with a mean of 11.20 (SD=1.56). This represents 86.15% of the test items that teachers answered correctly. Additionally, geometry manifests a high level of content, with a mean of 10.45 (SD=1.06). This indicates that mathematics teachers answered 87.08% of the test items correctly. On the other hand, trigonometry obtained a fairly high rating, with a mean of 10.43 (SD=1.17), and 80.19% of the items were answered correctly.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

The result implies that most teachers have a very high mathematical quotient in statistics, algebra, geometry, and trigonometry. Additionally, high math quotients suggest that teachers' performance exceeds expectations. All goals and targets were achieved above the established standards.

The present findings are consistent with the ideas of Austin (2015) that when teachers possess an acceptable degree of mathematical quotient (Austin, 2015), teachers' comprehension of mathematical material in students' activities improves, as do their teaching methods and problem-solving abilities (Yun & Ah, 2016). Additionally, they can forecast the content and understanding of math teachers and assist them in recognizing important math events, providing relevant interpretations, and relating them to teaching strategies (Ekmekci et al., 2019).

The mathematical quotient level is the knowledge that math teachers need to make mathematical concepts understandable and relatable to students' everyday lives (Chick & Stacey, 2013). Students at schools with teachers who are not proficient in mathematics lack an in-depth understanding of mathematical ideas. Teachers must possess mathematical knowledge to teach mathematics in schools (Bala, 2020).

Extent of Teaching Scholasticness of the Teachers

Table 6. Extent of Teaching Scholasticness of Teachers in terms of Content Knowledge and Pedagogy

Objectives	**Mean**	**SD**	**Verbal description**
1. Applied knowledge of content within and across curriculum teaching areas.	4.98	0.16	Outstanding
2. Used a range of teaching strategies that enhance learner achievement in literacy and numeracy skills.	4.98	0.16	Outstanding
3. Applied a range of teaching strategies to develop critical and creative thinking as well as other higher order thinking skills.	4.75	0.43	Outstanding
Section Mean	**4.90**	**0.25**	**Outstanding**

Table 6 shows the extent of teachers' teaching scholastics in terms of content knowledge and pedagogy. The overall mean of 4.90 (SD=0.25) indicates that teachers' content knowledge and pedagogy are outstanding. Teachers possess extraordinary teaching skills when it comes to mastering the content of the lessons and understanding.

When taken singly, to address learning objectives, these were applied knowledge of content within and across curriculum teaching areas and used a range of teaching strategies that enhance learner achievement in literacy and numeracy skills obtained the mean of 4.98 (SD=0.16) respectively. To satisfy curriculum objectives in applied a range of teaching strategies to develop critical and creative thinking as well as other higher order thinking skills obtained the mean of 4.75 (SD=0.43).

The result implies that the teachers' content knowledge and pedagogy are high. The mathematics teacher's mastery of the content and conduct of effective and efficient instruction in mathematics are excellent. The teacher created and implemented curricular-standard assessment strategies and successfully used instructional resources, including ICT, to accomplish learning objectives.

The present findings are consistent with the concepts of DepEd (2017). The domain of content knowledge and pedagogy, according to DepEd (2017), recognizes the importance of teachers possessing a strong and critical understanding of applying theories and principles of learning and instruction as well as a command of topic knowledge and its connections both inside and outside of curricular areas. Teachers' ability to employ pertinent, developmentally appropriate pedagogy based on current research and subject-matter expertise is included in content knowledge and pedagogy (DepEd, 2015).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Table 7. Extent of Teaching Scholasticness of Teachers in Terms of Learning Environment & Diversity of Learners

Objectives	**Mean**	**SD**	**Verbal description**
1. Displayed proficient use of Mother Tongue, Filipino, and English to facilitate teaching and learning	4.90	0.30	Outstanding
2. Established safe and secure learning environments to enhance learning through the consistent implementation of policies, guidelines, and procedures.	4.85	0.36	Outstanding
3. Maintained learning environments that promote fairness, respect, and care to encourage learning.	4.93	0.35	Outstanding
Section Mean	**4.89**	**0.34**	**Outstanding**

Table 7 demonstrates the extent of teachers' teaching skills in terms of learning environment and diversity of learners. The respondents manifest outstanding ratings on learning environment and diversity of learners, with a mean of 4.89 (SD=0.34). This means that the learning environment and diversity of learners were exceedingly performed at an outstanding level.

When taken individually, displayed proficient use of Mother Tongue, Filipino, and English to facilitate teaching and learning obtained the mean of 4.93 (SD=0.35). On the other hand, established safe and secure learning environments to enhance learning through the consistent implementation of policies, guidelines, and procedures obtained a mean of 4.85 (SD=0.36).

The result implies that teachers' learning environments and diversity of learners are outstanding. Teachers design classrooms that reflect the diversity of their students. This involves recognizing and appreciating the variations in students' backgrounds, experiences, and learning styles.

The learning environment places a strong emphasis on the role that educators play in establishing safe, secure, equitable, and supportive environments in order to promote student accountability and achievement (DepEd, 2017). Creating a learning environment where teachers can successfully manage students' conduct both in-person and virtually is the main goal of this field. In order to promote strong classroom connections and attain the highest levels of learning, it highlights the necessity for educators to employ a variety of tools and ideas for stimulating and intellectually challenging activities (Llego, 2021).

Good communication skills, knowledge, credibility, and readiness are not the only factors contributing to teaching excellence in a good or effective learning environment. An ideal academic setting helps students grow personally and psychosomatically, enhances their social well-being, and best prepares them for their future careers (Shrestha, 2019).

Table 8. Extent of Teaching Scholasticness of Teachers in Terms of Curriculum And Planning & Assessment and Reporting

Objectives	**Mean**	**SD**	**Verbal description**
1. Established a learner-centered culture by using teaching strategies that respond to their linguistic, cultural, socio-economic, and religious backgrounds.	4.90	0.30	Outstanding
2. Adapted and used culturally appropriate teaching strategies to address the needs of learners from indigenous groups.	4.85	0.36	Outstanding
3. Used strategies for providing timely, accurate, and constructive feedback to improve learner performance.	4.98	0.16	Outstanding
Section Mean	**4.91**	**0.27**	**Outstanding**

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Table 8 displays the extent of teachers' teaching skills in terms of curriculum, planning, assessment, and reporting. As shown, the curriculum, planning, assessment, and reporting were assessed as outstanding, with an overall mean of 4.91 (SD=0.15). This means teachers have excellent ways of meeting the standards of curriculum and planning.

In particular, teachers can utilize various teaching strategies that provide timely, accurate, and constructive feedback to improve learner performance with a mean of 4.98 (SD=0.16).On the other hand, addressing the gender, needs, interests, and experiences of learners through developmentally appropriate, differentiated learning experiences attained the mean of 4.85 (SD=0.36).

The result implies that teachers possess outstanding teaching skills, manifested in their excellent work in curriculum, planning and assessment, and reporting. The process of developing, implementing, evaluating, and revising the curriculum implemented by public schools is always performed.

The curriculum and planning address teachers' comprehension and participation in local and national curriculum requirements. This area encompasses their ability to convert course content into captivating lessons that follow the principles of effective teaching and learning. Instructors must draw on their professional skills to prepare and develop meticulously organized and sequenced courses (DepEd, 2017). In addition to being contextually relevant and including a range of teaching and learning resources, these lesson plans and any related educational initiatives should consider the students' needs. In order to improve student engagement, knowledge, and achievement, the Domain expects teachers to communicate learning objectives (Sabio et al., 2020).

Table 9 shows the summary of the scholasticity of teachers in mathematics. As shown, teaching scholasticness of teachers obtained the mean of 4.91 (SD=0.15). This indicates that the overall mean score possesses outstanding performance.

Table 9. Summary of Teaching Scholasticness of Teachers

Variables	**Mean**	**SD**	**Verbal description**
Content knowledge and pedagogy	4.90	0.17	Outstanding
Learning environment & diversity of learners	4.89	0.20	Outstanding
Curriculum and planning & assessment and reporting	4.91	0.15	Outstanding
Section Mean	**4.90**	**0.17**	**Outstanding**

In particular, curriculum, planning, assessment, and reporting had the highest mean of 4.91 (SD=0.15). Meanwhile, content knowledge and pedagogy had a mean of 4.90 (SD=0.17). On the other hand, the learning environment and diversity of learners had the lowest mean of 4.89 (SD=0.20). The teaching scholastics denote the quality of teachers' performance.

The result implies that teachers possess outstanding teaching skills. They already manifest expertise as proficient and serve as role models. Outstanding teachers have exceptional achievement and commitment in quality, efficiency, timeliness, technical skills and knowledge, ingenuity, creativity, and initiative in delivering their lessons.

Teachers' academic success in teaching arithmetic has a substantial impact on students' interest and enthusiasm to excel in the subject, according to Tambunan et al.'s (2021) study on the analysis of instructors' academic performance to generate student interest and motivation toward mathematical achievement. Students' drive to succeed in mathematics is poor, and math teachers generate interest. At the same time, teachers' academic skills in fostering students' enthusiasm and drive to succeed in mathematics fall into the low category. Students are less interested and driven to learn mathematics because of teachers' poor motivation and interest-building skills (Tutor & Elbanbuena, 2024).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Table 10. Results of Analysis of Variance (ANOVA) Between the Profile of the Teachers and their Mathematical Quotient

	SS	df	MS	F	p-value	F-crit
Between Groups	51586.6	3	17195.53	5051.80	0.43	2.66
Within Groups	531	156	3.40			
Total	52117.6	159				

α=0.05 level of Significance

Table 10 presents the analysis of variance between teachers' profiles and their mathematical quotient. A p-value of 0.43 (p >.05) in the ANOVA suggested that there is no statistically significant effect between the teachers' mathematical quotient (MQ) and their profile, which includes gender, teaching position, and number of coordinatorships. This indicates that the sample's teachers' differences in mathematical proficiency cannot be linked to these professional and demographic factors. The results imply that these facets of a teacher's training have little bearing on their proficiency in mathematics.

The implications of these findings suggest that gender, teaching position, and coordinatorship do not significantly influence teachers' mathematical quotient. Factors such as professional rank or leadership roles do not necessarily correlate with mathematical proficiency. Since gender and teaching position are not significant factors, mathematical ability among teachers may be influenced more by individual skills, experience, or training rather than demographic or professional roles.

Several studies have explored whether demographic factors, such as gender and teaching position, influence mathematical competence. Research by Fennema and Sherman (2017) suggests that gender differences in mathematical ability are often linked to social and cultural influences rather than innate cognitive abilities. Hyde et al. (2018) indicate that gender differences in mathematical performance are minimal and largely context dependent.

A teacher’s mathematical quotient measures their mathematical knowledge and its application in teaching. This knowledge is crucial for effectively delivering mathematics instruction, which involves clarifying concepts for students, analyzing their responses and solutions, assessing the accuracy of textbook content, utilizing representations correctly in lessons, and offering appropriate examples of mathematical concepts, algorithms, or proofs (Hill et al., 2014).

This reinforces the need to assess teacher quality and effectiveness using multifaceted approaches. Standardized measures like MQ provide valuable data, but they must be complemented with qualitative assessments, such as classroom observations and reflective teaching practices, to form a complete picture of teacher competence. Future studies may benefit from exploring how motivational, contextual, and instructional factors mediate mathematical teaching performance, moving beyond demographic variables to more dynamic, practice-based indicators of effectiveness.

Table 11. Results of Analysis of Variance Between the Profile of the Teachers and their Teaching Scholasticness

	SS	df	MS	F	p-value	F-crit
Between Groups	362.6	3	120.87	255.42	0.58	2.66
Within Groups	73.82	156	0.47			
Total	52117.6	159				

α=0.05 level of Significance

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Table 11 shows the analysis of variance between the profile of the teachers and the teaching scholasticness. The results indicate that there is no statistically significant correlation between the teachers' profile (gender, teaching position, and number of coordinatorships) and their teaching scholasticness, as reflected by a p-value of 0.58, which is substantially higher than the standard alpha level of 0.05. The large p-value suggests that the variance observed in teaching scholasticness across different teacher profiles could be due to chance rather than a meaningful relationship.

Professional rank or teaching position does not necessarily correlate with scholastic aptitude. According to Hill et al. (2014), effective teaching depends more on subject-matter expertise and pedagogical skills than rank or title. Studies have also shown that teachers at various levels—whether entry-level or senior can be equally effective depending on their training and instructional methods (Darling-Hammond, 2015).

The lack of a significant correlation between teacher profiles and teaching scholasticness highlights the need for teacher development programs to prioritize continuous professional development focused on enhancing subject knowledge and teaching skills rather than relying on rank or seniority. This finding supports the idea that career growth and advancement should be based on teaching performance and commitment to student achievement, not demographic factors or position. By emphasizing instructional skills and professional growth, education systems can create more equitable and effective learning environments for both teachers and students.

These findings also align with the perspective of Ball, Thames, and Phelps (2008), who emphasized that deep, flexible knowledge of content and pedagogy is what distinguishes effective teachers—not their job titles or years in service. Therefore, to improve teaching outcomes and promote equity in professional opportunities, school systems should ensure that support structures and advancement decisions are based on actual instructional performance rather than on demographic or positional factors alone.

Table 12. Correlational Analysis Between the Mathematical Quotient of Teachers and their Teaching Scholasticness

Indicators	**Mean**	**SD**	**r-value**	**p-value**	**Interpretation**
Mathematical Quotient	10.70	1.23			
			0.576	0.013	Significant
Teaching Scholasticness	4.90	0.07			

α=0.05 level of Significance

The Mathematical Quotient has a mean value of 10.70 with a standard deviation (or error) of 1.23, indicating moderate variability in the dataset. The additional statistical values, 0.576 and 0.013, suggest a strong correlation and a low p-value, reinforcing the statistical significance of the findings. Since the significance threshold is met, we can conclude that the observed effects are unlikely to be due to chance.

This implies that the significant relationship between teachers' mathematical quotients and teaching scholastics suggests that higher levels of mathematical proficiency are associated with better scholastic performance, reinforcing the importance of strong mathematical foundations in education. The rejection of the null hypothesis indicates that these variables are dependent and influence each other meaningfully.

Teachers' abilities to understand and deliver mathematical content significantly impact students' learning outcomes. Effective use of mathematics depends on students' engagement with mathematical tools and concepts and their ability to think critically and apply their knowledge (Celik et al., 2020). A teacher plays a crucial role in helping students develop mathematical proficiency by guiding them in identifying, analyzing, and applying mathematical practices. Mathematics education can be viewed as a structured approach to developing key proficiency strands. However, in many cases, these practices are not systematically cultivated in schools, leading to gaps in student learning (Kim et al., 2019).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

CONCLUSION

The following conclusions are drawn from the findings and the tested hypothesis.

The male teachers slightly outnumbered female teachers in mathematics specialization. Most mathematics teachers held entry-level positions, highlighting the need for career advancement opportunities. Additionally, the distribution of coordinatorship roles suggested that non-teaching personnel now handle many ancillary services, reducing the workload for teachers.

Teachers' high mathematical quotient suggested that they possess strong content knowledge, which can positively impact students' learning and achievement in mathematics. A slightly lower proficiency in trigonometry implied that mathematical competency across all domains can lead to more effective instruction, ultimately improving student performance and engagement in mathematics.

Teachers exhibited outstanding teaching scholasticness, with high proficiency in curriculum planning, assessment, content knowledge, and pedagogy. However, slightly lower performance in managing the learning environment and diverse learners suggests a need for further professional development in this area.

Gender, teaching position, and coordinators did not significantly affect teachers' mathematical proficiency or scholastic performance.

The mathematical quotient of teachers was statistically significant in teaching scholasticness, showing a strong correlation and a low p-value. The observed results are reliable and not due to chance, emphasizing the consistency of teachers' mathematical skills.

RECOMMENDATIONS

Upon a thorough study of the findings, the following actions are recommended:

1. The school heads may provide career advancement programs and leadership training to support teachers in moving beyond entry-level positions. Since some teachers handle multiple coordinatorship roles while others have none, a more equitable distribution of responsibilities may be considered to prevent workload imbalances.
2. Teachers may engage in continuous professional development programs to further strengthen their mathematical proficiency, particularly in trigonometry, where their performance was slightly lower. Additionally, schools may provide targeted training and instructional resources to ensure well-rounded competence across all areas of mathematics, enhancing overall teaching effectiveness.
3. To further enhance teaching scholasticness, teachers may engage in professional development programs focused on improving strategies for managing diverse classrooms and learning environments. Additionally, schools may provide supportive resources and training to strengthen inclusivity and adaptability in teaching practices, ensuring that all students receive effective instruction.
4. Professional development programs may focus on enhancing teachers' mathematical skills and expertise through continuous training and workshops. Schools may prioritize individual growth and competency-building initiatives rather than relying on demographic or professional factors to improve mathematical proficiency.
5. School heads may provide targeted support and resources to improve teaching effectiveness, regardless of demographic or professional roles.
6. DepEd may innovate initiatives to ensure teachers stay updated with best practices in mathematics education and improve their instructional methods.
7. For further study, researchers may explore the factors influencing Mathematical quotients and Teaching Scholasticness, such as teaching experience, professional development, and instructional strategies. Additionally, future studies may expand the sample size to include more schools and

examine how teachers' mathematical proficiency impacts student performance, providing deeper insights into effective mathematics instruction.

8. Including participants from both urban and rural schools would offer a broader perspective on teaching scholasticness and mathematical proficiency.
9. Incorporating more challenging items or nuanced evaluation criteria could provide a more accurate assessment of teacher variability.
10. Mathematical proficiency contributes to better teaching, but it would be valuable to explore how this knowledge translates into better classroom practices (e.g., examples of specific teaching strategies used by mathematically proficient teachers).

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