

# COMPETENCY AND NEEDS OF MATHEMATICS TEACHERS: BASIS FOR ENHANCEMENT PROGRAM

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## ABSTRACT

*This study determined the competency and needs of mathematics teachers in Mercedes and Daet Districts as basis for enhancement program. The study utilized a descriptive-correlational research design with documentary analysis of Individual Performance Commitment and Review Form (IPCRF) and Classroom Observation Tool (COT), along with a survey questionnaire. Total enumeration was employed which involved seventy-four mathematics teachers. The findings revealed that most teachers have over 22 years of teaching experience, hold a baccalaureate degree with a major in mathematics, and have attended two relevant trainings. Teachers were rated outstanding in content knowledge and pedagogy, and assessment and reporting, but a notable portion was rated very satisfactory in COT. The study found a significant correlation between educational attainment and both IPCRF objective 3 and COT indicator 3, which involves using a range of teaching strategies to develop higher-order thinking skills. Despite high performance, the study highlighted a need for improvement in modern teaching methods, curriculum alignment, and collaborative learning. The study also found no correlation between teachers' competencies and professional needs, indicating a universal demand for ongoing support. These findings underscore the importance of tailored professional development programs to address diverse needs of mathematics teachers. Consequently, an enhancement program is proposed to support ongoing improvement among teachers in public secondary schools in the Mercedes and Daet Districts.*



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## 1. INTRODUCTION

Over the years, the field of education has witnessed significant changes in pedagogical approaches, curriculum standards, and the integration of technology into teaching and learning (Kumar, 2023). To keep pace with these evolving dynamics, Math teachers must continually enhance their competencies and adapt their teaching methods to meet the diverse needs of today's learners (Srinivasa, Kurni & Saritha 2022).

In the Philippines, where the pursuit of quality education is a paramount goal, addressing the competency and professional development needs of Math teachers holds particular significance (Llurag et al. 2024). Several legal mandates and educational policies emphasize the importance of continuous teacher improvement to enhance the quality of

education in the country. These include the Enhanced Basic Education Act of 2013 (K-12 Law), which underscores the importance of teacher quality and professional development, and the Magna Carta for Public School Teachers, which recognizes teachers' rights to opportunities for professional advancement and training (Smith & Gillespie 2023).

Moreover, DepEd Order No. 02, s. 2015 (Results-Based Performance Management System for DepEd Teaching and Non-Teaching Employees) establishes a results-based performance management system for teachers, encompassing the assessment of competencies and the need for targeted professional development. In addition, DepEd Order No. 35, s. 2016 or "The Learning Action Cell (LAC) as a K to 12 Basic Education Program School-Based Continuing Professional Development Strategy for the

Improvement of Teaching and Learning," outlines the implementation of LACs as a professional development strategy within the K to 12 Basic Education Program. LACs are designed to facilitate collaborative learning among teachers, fostering an environment where they can exchange ideas, enhance teaching methodologies, and collectively improve teaching and learning outcomes. Furthermore, DepEd Order No. 42, s. 2017 (National Adoption and Implementation of the Philippine Professional Standards for Teachers) serves as a guide for teacher development, performance evaluation, and continuous improvement within the education system in the Philippines.

Nonetheless, despite substantial efforts to improve educational outcomes, the Philippines has emerged as an educational underperformer, receiving low marks in three separate global assessments of student proficiency in science, technology, engineering, and mathematics (Vazquez-Lopez & Huerta-Manzanilla 2021, Sison, 2022).

Furthermore, the National Achievement Test (School Year 2022-2023) results particularly in numeracy in the Division of Camarines Norte were low, with a rating of 33.99%, which below the national standard MPS of 75. Consequently, 59.85% or 1,479 out of 2,471 of the learners belong to low proficient level and 27.07% belongs to not proficient. Moreover, of the 8,167 senior high students, the majority of students fall into the "Low Proficient" category, constituting 66.28% of the total examinees. "Nearly Proficient" students make up 27.60%. Only a small percentage of students fall into the "Proficient" category, accounting for 0.18%. Surprisingly, there are no students in the "Highly Proficient" category based on the data. The results of NAT mean that the numeracy assessment results were particularly low in the secondary schools in Camarines Norte, indicating a significant need for support in all numeracy skills or competences. This highlights the necessity for substantial support for all learners.

Finally, research clearly demonstrates that high-achieving teachers are essential to improving student accomplishment. In other words, high-quality learning is dependent on high-quality teaching. Therefore, improving the quality of teachers becomes crucial for the long-term and sustainable development of the country (DepEd Order No. 42, s. 2017).

Based on this notion, the researcher is driven to enrich the mathematics education by conducting a study on the competency and needs of Math teachers as basis for an enhancement program. Specifically, it answered the following sub-problems: 1) What is the profile of mathematics teachers along a) number of years teaching mathematics, b) educational attainment, and c) number of relevant trainings attended; 2) What is the level of competency mathematics teachers along a) content knowledge and pedagogy, and b) assessment and reporting; 3) Is there a significant relationship between the profile and competency of mathematics teachers; 4) What are the needs of mathematics teachers to enhance their competency; 5) Is there a significant relationship between the competency and

needs of mathematics teachers; 6) What enhancement program may be proposed to address the competency and needs of mathematics teachers in Mercedes and Daet districts in the Division of Camarines Norte?

## **2. METHODOLOGY**

This study employed descriptive-correlational method of research. The descriptive method was relevant in describing the level of competency and needs of mathematics teachers in Mercedes and Daet districts in the Division of Camarines Norte. Meanwhile, the correlational method was used to determine the relationship between the profile of mathematics teachers, such as the number of years teaching mathematics, educational attainment, and number of relevant trainings attended, as well as the competency of math teachers along with content knowledge and pedagogy, assessment and reporting, and the need to enhance their competency.

The study involved seventy-four (74) mathematics teachers in the Mercedes and Daet districts in the Division of Camarines Norte. Total enumeration was utilized for the study. The sources of data were the answers of the respondents in the survey questionnaire checklist.

The data on the competency and needs of mathematics teachers as basis for enhancement program were analyzed using frequency count, weighted mean, documentary analysis, and Chi – square statistics test. Frequency count analyzed the profile and determined the needs of mathematics teachers. Weighted mean and documentary analysis of IPCRF and COT determined the level of competency of mathematics teachers along content knowledge and pedagogy, and assessment and reporting. Meanwhile, Chi – square statistics test determined the significant correlation between the profile and competency of mathematics teachers as well as the significant relationship between the competency and needs of mathematics teachers.

## **3. RESULTS AND DISCUSSION**

This part presents the results of the data analysis in response to the problems covered by this study.

### **3.1 Profile of mathematics teachers**

The majority of mathematics teachers (18 respondents) have 22 years or more of teaching experience; 53 hold a baccalaureate degree with a major in mathematics; and they have attended two relevant mathematics trainings.

This implies that school's benefit from a group of highly experienced educators capable of communicating complex mathematical concepts, serving as valuable resources for colleagues, contributing to consistency and stability in the mathematics department, and potentially improving student achievement through their expertise and commitment to ongoing professional development.



**Table 1.** Profile of the Respondents

Profile	Frequency (f)	Percentage (%)
<i>Number of Years Teaching Mathematics</i>		
1 – 3 years	4	5.41
4 – 6 years	7	9.46
7 – 9 years	9	12.16
10 – 12 years	10	13.51
13 – 15 years	13	17.57
16 – 18 years	6	8.11
19 – 21 years	7	9.64
22 years and above	18	24.32
Total	74	100.0
<i>Educational Attainment</i>		
Baccalaureate Degree in Education major in Mathematics	53	71.62
Baccalaureate Degree in Education major in any subject aside from Mathematics	13	17.57
Baccalaureate Degree with Professional Education	8	10.81
Total	74	100.0
<i>Number of Relevant Trainings Attended</i>		
One	18	24.32
Two	47	63.51
Three	6	8.11
Four	3	4.05
Total	74	100.0

Moreover, this implies that teachers are key agents in shaping the trajectory of education and society as a whole. Additionally, investing in teachers implies a recognition of their importance in fostering critical thinking, creativity, and social skills among students, which are essential for addressing contemporary challenges and contributing positively to society. Finally, this also suggests that there may be room for

further professional development opportunities for Mathematics teachers.

**3.2 Level of competency of mathematics teachers**

The indicators along content knowledge and pedagogy, and assessment and reporting were based on Individual Performance Commitment and Review Form (IPCRF) and Classroom Observation Tool (COT).

**Table 2.** Level of Competency of Mathematics Teachers in Mercedes and Daet Districts Based on IPCRF Rating

Competency	Weighted Mean	Adjectival Rating
<b>A. Content Knowledge and Pedagogy</b>		
1. Applied knowledge of content within and across curriculum teaching areas (PPST 1.1.2)	4.92	Outstanding
2. Used a range of teaching strategies that enhance learner achievement in literacy and numeracy skills. (PPST 1.4.2)	4.55	Outstanding
3. Applied a range of teaching strategies to develop critical and creative thinking, as well as other higher - order thinking skills. (PPST 1.5.2)	4.49	Outstanding
<i>Sub-Mean</i>	<b>4.65</b>	<b>Outstanding</b>
<b>B. Assessment and Reporting</b>		
1. Designed, selected organized and used diagnostic, formative and summative assessment strategies consistent with curriculum requirements. (PPST 5.1.2)	4.47	Outstanding
2. Monitored and evaluated learner progress and achievement using learner attainment data. (PPST 5.2.2)	4.91	Outstanding
3. Communicated promptly and clearly the learners' needs, progress and achievement to key stakeholders, including parents/guardians. (PPST 5.4.2)	4.82	Outstanding
<i>Sub-Mean</i>	<b>4.73</b>	<b>Outstanding</b>
<b>OVERALL MEAN</b>	<b>4.69</b>	<b>OUTSTANDING</b>

**Legend**

- 4.20 – 5.00 Outstanding
- 3.40 – 4.19 Very Satisfactory
- 2.60 – 3.39 Satisfactory
- 1.80 – 2.59 Unsatisfactory
- 1.00 – 1.79 Poor

The level of professional performance of mathematics teachers in public secondary schools in the Mercedes and Daet Districts within the Division of Camarines Norte, specifically regarding content knowledge and pedagogy, was evaluated using two metrics. Based on the Individual Performance Commitment and Review Form (IPCRF), the teachers received an overall mean score of 4.65, which is interpreted as "outstanding." However, based on the Classroom Observation Tool (COT) breakdown shows that while the majority of

teachers are performing at an outstanding level, a notable proportion also falls into the very satisfactory category.

Furthermore, for the Assessment and Reporting, the teachers received an overall mean score of 4.73 in IPCRF, which interpreted as "outstanding." However, while the majority of teachers are performing at an outstanding level, a notable proportion also falls into the very satisfactory category in Classroom Observation Tool (COT).

**Table 3.** Level of Competency of Mathematics Teachers in Mercedes and Daet Districts Based on COT Rating

Competency	Rating					Mean	Measures Median	Mode
<b>A. Content Knowledge and Pedagogy</b>	3	4	5	6	7			
1. Applied knowledge of content within and across curriculum teaching (PPST 1.1.2)				6	68	6.92	7	7
2. Used a range of teaching strategies that enhance learner achievement in literacy and numeracy skills. (PPST 1.4.2)			1	31	42	6.55	7	7
3. Applied a range of teaching strategies to develop critical and creative thinking, as well as other higher - order thinking skills. (PPST 1.5.2)			2	34	38	6.49	7	7
<b>B. Assessment and Reporting</b>								
1. Designed, selected organized and used diagnostic, formative and summative assessment strategies consistent with curriculum requirements. (PPST 5.1.2)			1	37	36	6.47	6	6

**Legend:**

COT Rating	RPMS 5 – point Scale Rating	Range (WM)	Adjectival Rating
7	5	6.20 – 7.0	Outstanding
6	4	5.40 – 6.19	Very Satisfactory
5	3	4.60 – 5.39	Satisfactory
4	2	3.80 – 4.59	Unsatisfactory
3	1	3.00 – 3.79	Poor

The data indicates a strong alignment between the self-assessment (IPCRF) and external observations (COT) regarding the teachers' abilities in content knowledge and pedagogy, and assessment and reporting. This alignment is crucial as it reflects both self-perception and actual performance, providing a holistic view of teacher effectiveness in enhancing student learning. Consistently, the high competency levels revealed by both IPCRF and COT suggest that teachers in the Mercedes and Daet districts are well-equipped to deliver quality education and support student learning through effective assessment practices. These findings can inform professional development initiatives, emphasizing advanced pedagogical techniques and innovative strategies to further enhance teaching effectiveness. By continuing to support and build on these strengths, educational leaders can ensure sustained high standards and improved student learning outcomes.

**3.3 Relationship between the profile and level of competency of mathematics teachers**

Table 4 revealed the significant relationship between the profile of mathematics teachers along educational

attainment and IPCRF objective 3 and COT indicator (Applied a range of teaching strategies to develop critical and creative thinking, as well as other higher – order thinking skills).

The calculated Chi – square test value of 11. 589 with a  $df = 4$  and  $p$  - value of 0.021 at  $\alpha = 0.05$  level of significance. Since  $p < 0.05$ , then the null hypothesis that there is no significant relationship between educational attainment and the competency of Mathematics teachers in content knowledge and pedagogy was therefore rejected. Thus, educational attainment shows a significant positive correlation with IPCRF and COT Content Knowledge 3 (Applied a range of teaching strategies to develop critical and creative thinking, as well as other higher – order thinking skills), indicating that higher levels of formal education are associated with better performance in this specific aspect of content knowledge and pedagogy competency. This significant relationship suggests that teachers with higher levels of educational attainment (such as advanced degrees or specialized training) are more likely to demonstrate stronger content knowledge and better pedagogical skills that are recognized and measured through classroom observations. These skills

include the ability to effectively apply a range of teaching strategies aimed at developing students' critical and creative thinking, as well as other higher-order thinking skills. Thus, the higher the educational qualification of a teacher, the more likely they are to possess a robust understanding of mathematical concepts and effective teaching methodologies, thereby enhancing their overall competency.

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**Table 4.** Test of Correlation between the Profile and Competency of Mathematic Teachers in Terms of Content Knowledge and Pedagogy, and Assessment and Reporting

Profile		Competency									
		Content Knowledge 1		Content Knowledge 2		Content Knowledge 3		Assessment and Reporting 1		Assessment and Reporting 2	Assessment and Reporting 3
		IPCRF	COT	IPCRF	COT	IPCRF	COT	IPCRF	COT	IPCRF	IPCRF
No. of Years Teaching Mathematics	Pearson Chi-Square	6.666	6.666	8.141	8.141	11.364	11.364	11.865	11.865	5.995	4.788
	df	6	6	12	12	12	12	12	12	6	6
	Asymp. Sig. (2-sided)	0.353	0.353	0.774	0.774	0.498	0.498	0.457	0.457	0.424	0.571
Educational Attainment	Pearson Chi-Square	0.834	0.834	3.468	3.468	<b>11.589*</b>	<b>11.589**</b>	1.398	1.398	1.659	0.361
	df	2	2	4	4	4	4	4	4	2	2
	Asymp. Sig. (2-sided)	0.659	0.659	0.483	0.483	0.021	0.021	0.845	0.845	0.436	0.835
No. of Relevant Training	Pearson Chi-Square	2.847	2.847	3.478	3.478	3.787	3.787	1.219	1.219	1.861	7.297
	df	3	3	6	6	6	6	6	6	3	3
	Asymp. Sig. (2-sided)	0.416	0.416	0.747	0.747	0.705	0.705	0.976	0.976	0.602	0.602

**\*P < 0.05, \*\*P < 0.01**

This finding highlights the importance of encouraging and supporting teachers to pursue higher education to improve their content knowledge and pedagogy. It also emphasizes the importance of continuous learning and experimentation with innovative teaching approaches. This led to the conclusion that developing competency in teaching mathematics requires a comprehensive method that goes beyond acquiring expertise over time or completing numerous training programs. It necessitates multi-level support, ongoing professional development, and a commitment to improving teachers' teaching qualifications and pedagogical skills. Looking

at teacher development in math education from this perspective would assist educators in providing teachers with the required information and tools for successful math instruction, allowing learners to succeed in this important subject.

**3.4 Needs of mathematics teachers to enhance their competency**

Based on the table 5, the majority demand relevant professional development activities employing modern teaching methodologies, with 16 mathematics teachers. This is followed by a clear understanding of curriculum alignment and educational standards, with 15 teachers,

and opportunities for collaborative learning and sharing best practices in math, with 13 teachers. Conversely, the lowest frequency demanded updated, contextualized, and localized teaching and learning resources, with 6 mathematics teachers.

This suggests that mathematics teachers have access to a sufficient amount of teaching and learning resources

that meet their current needs, they may find that the quality or relevance of available materials varies, making it challenging to find resources that meet their specific needs and preferences, and math teachers may feel that professional development activities can address their instructional needs more effectively than access to new resources.

**Table 5.** Needs of Mathematics Teachers To Enhance Competency

Needs	Frequency (f)	Percentage (%)	Rank
Developing creativity and innovation	8	10.8	5
Updated, contextualized and localized teaching and learning resources	6	8.1	7
Relevant professional development activities employing modern teaching methodologies	16	21.6	1
Technical assistance and support to address diverse learning needs	9	12.2	4
Clear understanding of curriculum alignment and educational standards	15	20.3	2
Opportunities for collaborative learning and sharing best practices in Math	13	17.6	3
Technical-know how as to technology integration in Mathematics instruction	7	9.5	6

Overall, the lower frequency of this need suggests that while updated, contextualized, and localized teaching and learning resources are important, other factors may currently take precedence in the minds of mathematics teachers when considering their professional development and instructional needs.

On the contrary, the survey underscores the paramount recognition among Mathematics teachers of the value and relevance of incorporating modern teaching methodologies into their practice. It indicates a desire among educators to stay updated with innovative instructional strategies and pedagogical techniques that can enhance student learning outcomes.

The findings were affirmed in the study of Lang (2020) which revealed that modern teaching methodologies prioritize establishing a supportive framework that aids students in reaching higher levels of awareness. The study indicates that combining various modern teaching approaches can enhance students' learning experiences. However, it was noted that selecting the right teaching method and effectively implementing it can pose significant challenges. Particularly in higher education institutions, ensuring that teachers receive adequate support and resources is crucial for successfully integrating new teaching methods and achieving improvements in student learning outcomes. Moreover, the second highest frequency need is for a clear understanding of curriculum alignment and educational standards. This highlights the necessity for teachers to have a thorough understanding of the curriculum and educational standards. Such knowledge is crucial for effective lesson planning and ensuring that instruction meets the required benchmarks.

Furthermore, the third demanded need was opportunities for collaborative learning and sharing best practices in Math. This emphasizes the importance of collaboration among teachers. Opportunities to share best practices and learn from peers can foster a community of practice that enhances teaching strategies and student outcomes.

In summary, the data emphasize the value teachers place on continuous learning, as evidenced by the strong preference for attending seminars and professional development opportunities. It also provides valuable insights into the key areas where mathematics teachers need support to enhance their competency.

### 3.5 Relationship between the competency and needs of mathematics teachers

Table 6 presents the correlation analysis between the competencies of mathematics teachers and their professional development needs. Competencies are measured through various objectives and indicators in the Individual Performance Commitment and Review Form (IPCRF) and Classroom Observation Tool (COT). The table lists the correlation coefficients and significance levels (Sig. 2-tailed) for each competency in relation to teachers' perceived needs.

The correlations between all the measured competencies (content knowledge and pedagogy, and assessment and reporting) and mathematics teachers' needs are not statistically significant. The p-values for all the competencies are greater than the significance threshold (typically  $p < 0.05$ ), indicating that there is no strong evidence to suggest a relationship between the

*Competency and Needs of Mathematics Teachers: Basis for Enhancement Program*

competency levels of teachers and their perceived needs for professional development. This implies that teachers' professional development needs are not directly influenced by their competency levels in content knowledge and pedagogy or

assessment and reporting. This could mean that all teachers, regardless of their competency levels, perceive a need for professional development. It suggests a general demand for ongoing training and support across all competency levels.

**Table 6.** Test of Correlation Between The Competency and Needs of Mathematics Teachers

Competency		Teacher's Needs		
		Pearson Chi-Square	df	Sig. (2-tailed)
Content Knowledge 1	IPCR	6.666	6	0.353
	COT	6.666	6	0.353
Content Knowledge 2	IPCR	8.141	12	0.774
	COT	8.141	12	0.774
Content Knowledge 3	IPCR	11.364	12	0.498
	COT	11.364	12	0.498
Assessment and Reporting 1	IPCR	11.865	12	0.457
	COT	11.865	12	0.457
Assessment and Reporting 2	IPCR	5.995	6	0.424
Assessment and Reporting 3	IPCR	4.788	6	0.571

**\*P < 0.05, \*\*P < 0.01**

Educational institutions and policymakers should consider that professional development needs are widespread and not limited to those with lower competencies. Therefore, a broad approach to professional development that addresses various aspects of teaching practice may be more effective than targeted interventions based solely on competency levels.

**3.6 Enhancement program to address the mathematics teachers' competency**

One of the objectives of this study is to design an enhancement program tailored to the specific competency levels and professional development needs of Mathematics teachers. By closely aligning the

program with the identified strengths, competencies, and areas for growth among educators, this aims to provide targeted support and resources that empower teachers to enhance their instructional practices and ultimately improve student learning outcomes in Mathematics.

The enhancement program includes a range of activities focusing on enhancing content knowledge and pedagogy, assessment and reporting competencies, and the needs of mathematics teachers. Table 7 presented the 3-year Enhancement Program for Mathematics Teachers.

**Table 7.** 3 – Year Enhancement Program for Math Teachers

Objective	Activity	Description	Timeline	Funding Source	Persons Involved	Success Indicators
Enhance Content Knowledge and Pedagogy	Curriculum integration Workshops	Integrating curriculum content across subjects.	SY 2024 - 2027	School MOOE	SDS ASDS CID EPS PSDS School Heads Teachers	Innovative lesson plans and learning activities.
	Advanced Teaching Strategies Seminars	Advanced strategies to enhance literacy, numeracy, thinking skills	INSET Yearly Schedule			Improved student performance in literacy and numeracy skills
	Professional Learning Communities (PLCs)	Regular meetings for sharing best practices and from each other's experiences.	And School – Based Learning Action Cell Schedule			Collaborative and innovative teaching culture
	Creative and Critical Thinking Skills Training	Fostering creative and critical thinking Skills	Every 2 <sup>nd</sup> and 4 <sup>th</sup> Friday of the Month			Implementation of new strategies in classrooms.



Enhance Assessment and Reporting Skills	Assessment Design Workshop	Designing diagnostic, formative and summative assessment	SY 2024 - 2027 INSET Yearly Schedule	School MOOE	SDS ASDS CID EPS PSDS School Heads Teachers	Enhanced quality of teacher-designed assessments and tools.
	Data-Driven Instruction Workshops	Using data to inform instructional decisions	And  School – Based Learning Action Cell Schedule Every 2 <sup>nd</sup> and 4 <sup>th</sup> Friday of the Month			Effective use of data in planning and to monitor student progress
Equip Teachers with Modern Teaching Methodologies	Blended and Technology-Enhanced Learning Training	Workshops on integrating blended learning and technology tools in the classroom. Includes use of online/offline strategies, learning management systems, and digital resources.	SY 2024 - 2027 INSET Yearly Schedule	School MOOE	SDS ASDS CID EPS PSDS School Heads Teachers	Increased use of blended and technology-enhanced learning, positive feedback from students and teachers
	Innovative Pedagogical Strategies Workshops	Training on Project-Based Learning (PBL), flipped classrooms, gamification, and inquiry-based learning. Focuses on designing engaging, real-world learning activities and fostering student collaboration and critical thinking.	And  School – Based Learning Action Cell Schedule Every 2 <sup>nd</sup> and 4 <sup>th</sup> Friday of the Month			Enhanced student engagement, higher quality of student projects, and improved critical thinking skills

After undergoing a thorough evaluation by the Schools Division Office, the utilization of this framework may begin. Certain aspects may undergo further refinement following consultative conferences with school leaders and division officials. Subsequently, schools are encouraged to consider and adopt the proposed recommendations to address the needs and enhance the competencies of Mathematics teachers in the Division of Camarines Norte.

#### 4. CONCLUSION

On the basis of the findings of the findings of the study, the following conclusions were arrived at: 1) that Mathematics teachers often possess a significant amount of teaching experience and typically hold a Bachelor's degree majoring in Mathematics. Additionally, a majority of teachers have engaged in professional development activities by attending two relevant trainings, (2) Mathematics teachers in the Mercedes and Daet districts possess high competency levels in both content knowledge and pedagogy, as well as assessment and reporting. The "Outstanding" ratings in both IPCRF and COT evaluations highlight their proficiency in essential teaching practices and effective application of advanced pedagogical techniques. While the majority of teachers are performing at an outstanding level, a notable proportion also falls into the very satisfactory category, indicating a slight variance in performance

levels among the teachers and indicating areas where further professional development could be beneficial. Despite this variance, the overall trend remains highly positive, underscoring the effectiveness of the current teaching workforce. These results highlight areas where continued professional growth and support can sustain and enhance educational quality. By building on these strengths, educational leaders can ensure that teachers remain at the forefront of effective teaching practices, ultimately benefiting student learning outcomes, (3) the hypothesis that there is no significant relationship between the profile of mathematics teachers (number of years teaching mathematics and number of relevant trainings attended) and the level of their competency in content knowledge and pedagogy, as measured by IPCRF and COT was failed to reject. Similarly, the hypothesis that there is no significant relationship between the profile of mathematics teachers (number of years teaching mathematics, educational attainment, and number of relevant trainings attended) and the level of their competency in content knowledge and pedagogy, as measured by IPCRF and COT was also failed to reject.

However, the null hypothesis that there is no significant relationship between the profile specifically educational attainment and the competency of mathematics teachers in content knowledge and pedagogy as measured by IPCRF and COT (Applied a range of teaching strategies to develop critical and creative thinking, as well as other higher – order thinking skills) was therefore rejected.

Thus, educational attainment seems to play a more influential role in determining their effectiveness in these areas, (4) secondary mathematics teachers of Mercedes and Daet District in the Division of Camarines Norte demand professional development activities employing modern teaching methodologies, clear understanding of curriculum alignment and educational standards, and opportunities for collaborative learning and sharing best practices in math, (5) the hypothesis that there is no significant relationship between the competencies and needs of mathematics teachers was fail to reject. Finally, the proposed enhancement program will address the competency and needs of mathematics teachers in public secondary schools specifically Mercedes and Daet District in the Division of Camarines Norte.

## **5. RECOMMENDATION**

The following recommendations to the area of research and development are hereby given: (1) the researcher strongly recommends prioritizing and emphasizing the significance of three crucial factors in shaping the profile and enhancing the effectiveness of mathematics teachers in the classroom: experience, specialized education, and ongoing professional development, (2) develop and deliver targeted professional development programs specifically designed to employ modern teaching methodologies into math lessons, provide detailed training on curriculum alignment and educational standards, along with easily accessible resources, and establishing professional learning communities (PLCs), mentorship programs, and collaborative workshops. These programs would provide teachers with practical strategies for engaging students actively in the learning process, can help teachers align their instruction with standards, ensuring consistency and high-quality education, and fostering critical thinking skills and encourage collaboration among teachers to share and develop their own culturally relevant and locally-situated resources and also enable teachers to share innovative ideas and successful strategies, fostering a community of practice, (3) Encourage mathematics teachers to pursue further education beyond a Bachelor's degree, especially in areas related to mathematics pedagogy and educational leadership. Provide support and incentives for teachers to enroll in graduate programs or pursue certifications in

specialized fields of mathematics education. In addition, develop workshops and seminars that specifically address the application of advanced teaching strategies, particularly those aimed at fostering critical and creative thinking skills among students. Emphasize the importance of continuous learning and experimentation with innovative teaching approaches, (4) Develop and deliver targeted professional development programs specifically designed to employ modern teaching methodologies into math lessons. These programs could focus on active learning strategies, such as project-based learning, game-based learning, flipped classroom models, inquiry-based learning, and collaborative learning techniques. These workshops will provide teachers with practical strategies for engaging students actively in the learning process and fostering critical thinking skills and encourage collaboration among teachers to share and develop their own culturally relevant and locally-situated resources, (5) Conduct regular assessments and evaluation to identify the evolving competencies, needs, and priorities of mathematics teachers, and 6) Implement the proposed 3-year enhancement program to systematically address the competency and needs of mathematics teachers in public secondary schools in the Mercedes and Daet districts. This program should include a combination of workshops, mentoring opportunities, curriculum development projects, and peer collaboration initiatives to support the professional growth and development of teachers over time. The utilization of the 3 – year enhancement program may commence after this has undergone thorough evaluation of Schools Division Office.

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