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Competence Level of 21st Century Mathematics Teachers: Basis for In-Service Training Program

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ABSTRACT: Teaching competence plays a vital role in the learning process. Teachers must possess high level of competence to ensure academic achievement. This study determined the teaching competence of 54 Mathematics Teachers in Unit III of Ilocos Sur Division during the School Year 2023-2024 as basis for an in-service training program. It answered the sub-problems: the profile of teachers in terms of age, gender, civil status, educational attainment, years in service, and number of related seminars in Mathematics for the last 3 years; the level of teaching competence of Mathematics teachers along dedication to teaching, knowledge of the subject matter, classroom organization and management, instructional organization, instructional implementation, and monitoring student progress and potential; the relationship between the profile of teachers and the level of teaching competence; crafting of in-service training program; and the level of acceptability of the training program. Descriptive-correlational and developmental research designs were used. Findings of the study showed that Mathematics teachers are very highly competent. Age and years of service has a positive significant relationship with the teachers' competence level. An in-service training program was crafted to maintain and uplift the competence level of the teachers. The in-service training program was rated very highly acceptable. In conclusion, though teachers are very highly competent, there are still competences that need to be improved. Teachers should engage in continuous professional development to maintain their very high competence level and improve the weaker competences. Thus, teachers should be provided with enough opportunities to enhance their craft.

KEYWORDS: teaching competence, mathematics teachers, in-service training program, competence level, 21st century teachers

I. INTRODUCTION

Mathematics is a significant part of human mind and reasoning ability, as well as, a great help in understanding the world. It supplies operative ways of constructing mental discipline. Moreover, Mathematics plays an important role in understanding the subject matters in other school subjects as it provides foundational skills. It is then imperative that teaching Mathematics must be taken seriously. Teachers must be well-equipped and competent to ensure that maximum learning takes place inside the classroom.

In studies made by various researchers, the primary task will be completed as efficiently as possible and learning will occur when the teacher possesses the necessary competence. Higher student achievement is also a result of having skilled teachers. Every teacher's level of competency affects students' learning outcomes. It is then essential to assess teachers' levels so that governments and educational institutions can use the findings for evaluation (Aindra et al, 2022).

Education consists of two components: teaching and learning. The teacher needs to be competent in teaching and knowledgeable about pedagogical subject in order to be effective and efficient. Learning on the other hand takes place when students grasp the lessons being taught and applies it in their lives. A careful preparation and appropriate activities help students attain maximum learning outcome. Furthermore, all classroom undertakings should be tailored to students' needs and interest to ensure achievement of educational goals and objectives.

Developing competencies referred to as 21st-century skills is becoming more and more popular as a way to raise the quality of instruction provided by teachers. Nevertheless, a major obstacle to achieving the intended changes is the absence of relevant strategies for supporting teacher professional development and a context-specific understanding of teaching practices (Kim, et al, 2019).

The field of education is constantly evolving, and Mathematics Education is no exception. Teaching Mathematics is currently undergoing significant changes due to pressure for reform from various sectors. One outcome of this pressure is the implementation of the K to 12 Curriculum (Flores, 2019).

There is a lack of continuing education programs aimed at professionalizing Mathematics teaching in the field of Mathematics Education. Typically, graduate degree courses in Mathematics Science and Mathematics Education are the only options available in this discipline. This shortage of opportunities for ongoing education in Mathematics needs to be assessed in order to meet the educational needs of learners in the 21st century.

Furthermore, the schools require qualified teachers who are knowledgeable in the teaching craft. Programs and trainings for teachers must be tailored to the areas in which they need to advance. Schools must work with the Department of Education to plan and distribute high-quality instruction while also providing teachers with the design for successful instructional enhancement programs that would increase their teaching abilities and pedagogical content understanding (Gamayao & Biñas, 2021).

In Ilocos Sur, Philippines, seminars are being offered to public school teachers in order to uplift their teaching competence. However, only few slots are given to teachers. Moreover, there is also a limited number of seminars for Mathematics teachers. The only option left for teachers to grow professionally is to join online courses at their own expense. Also, a one-week in-service training is being conducted during midyear break catering different subject areas.

It is a given fact that Mathematics teachers are competent enough to teach. However, at some point, teacher's competence become stagnant as there are not enough opportunities to nurture it. Teachers rarely have a chance to join seminars be it division level, regional or national seminars.

II. METHODOLOGY

Descriptive research design was used to describe the profiles of the teacher respondents and their level of competence. Correlational research was also used to determine the relationship between the profiles of the teachers and the level of competence. Developmental research method was used in developing an in-service training program.

The respondents in this study were the 54 Junior High School Teachers of Unit III in the Schools Division of Ilocos Sur for the school year 2023-2024. Unit III consists of public high schools in the municipalities of Narvacan, Nagbukel, Santa Maria, Burgos, San Esteban, Santiago, Banayoyo, Lidlidda, and San Emilio in Ilocos Sur, Philippines. Total enumeration was employed.

The instrument used in gathering the needed data is a survey-questionnaire adopted from the study of Flores (2019). The questionnaire consists of two parts. Part I includes the respondents' profiles along age, gender, civil status, educational attainment, years in service, and the number of related seminars in Mathematics attended for the last 3 years. Part II determines the level of teaching competence of Mathematics teachers along dedication to teaching, knowledge of the subject matter, classroom organization and management, instructional organization, instructional implementation, and monitoring student progress and potential. The data were gathered via google form after seeking permission from the office of the Schools Division Superintendent of Ilocos Sur Division. The training program was developed to enhance the competence level of the mathematics teachers in Unit III of Ilocos Sur Division. To establish the acceptability of the training program, a questionnaire checklist was adopted from the study of Ramos (2020) and utilized.

Frequency counts and percentages were used to describe the profiles of the respondents. Weighted mean was used to determine the level of teachers' competence and the level of acceptability of the training program in sub-problems 2 and 5. For sub-problem 3, Pearson's r correlation was used to determine the significant relationship between the profiles of the teachers and the level of competence.

III. RESULTS AND DISCUSSION

1. Profile of the Respondents

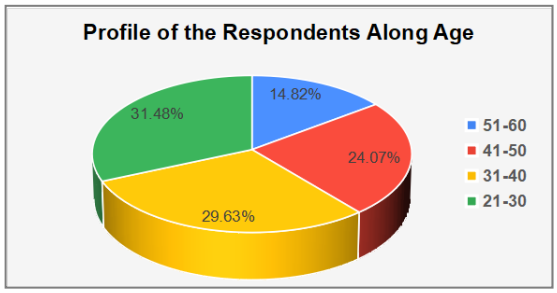

Figure 1. Profile of the Respondents Along Age

Figure 1 presents the profile of the respondents along age. The highest percentage of respondents are aged 21-30 comprising 31.48 percent. It was followed by aged 31-40 ranging 29.63 percent of the total respondents. There is quite a smaller number of teachers aged 41-50 and 51-60, only a total of 38.89 percent of the respondents. This only means that teachers in unit III is dominated by a new breed of Mathematics teachers. These teachers belong to the millennial age - the tech-savvy, who can easily cope up with new trends and technologies. They can also effortlessly relate to the 21st century learners since they also belong to the computer generation.

Marrero, et. al (2023) pointed out that millennials, people born between 1981 to 1996, are considered to be digital natives. This generation of teachers have a natural grip on technology because they were exposed to it at home and in school. Their ease with technological use has a positive impact on their regular work including creating bonds and communicating with their students. In fact, students believe that these teachers understand them better than others.

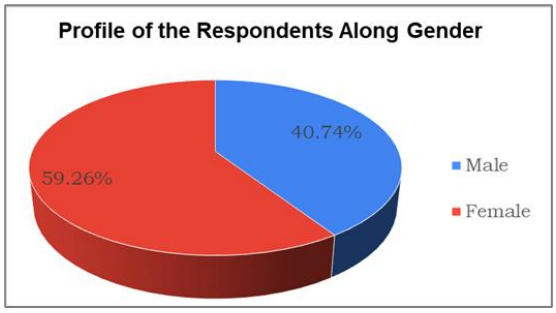

Figure 2. Profile of the Respondents Along Gender

Figure 2 displays the number of males and females among the repondents. The Mathematics teaching force of Unit III is dominated by females covering 59.26 percent. Male teachers, on the contrary, only covers 40.74 percent. While Mathematics as a subject appeal to men in general, this shows that teaching is more appealing to women. Teaching is a tedious profession. It requires a lot of patience especially in dealing with students. Women as a natural bearer of children seemed to be more fascinated with this kind of job other than men.

This is backed up by the study of Bunoan (2020) which shows that teaching is dominated by female which can be explained by the fact that female teachers are forbearing, persistent, and accommodating. Turk and Korkmarz (2022) also underscored that in terms of commitment to the teaching profession and selfless effort, female teachers are notably higher in total score than male teachers.

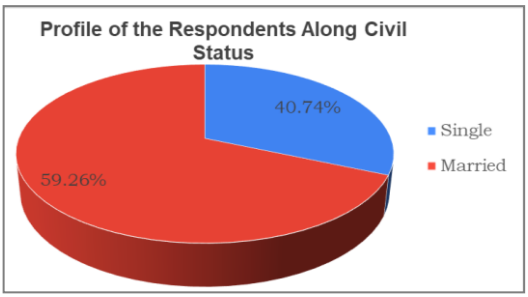

Figure 3. Profile of the Respondents Along Civil Status

Figure 3 reflects the civil status of the teachers. It could be gleaned from the figure that 68.52 percent of the respondents are married while those who are single are only 40.74 percent. While it could be overwhelming to see the percentage, teachers' marital status does not necessarily affect their competence as learning service providers. Teachers' ability lies on how they carefully devise, plan, and execute their lessons among all other factors.

This finding corroborates with the study of Rizvi (2016) in which it turned out that marital status of teachers has no effect in their professional adjustment condition. There is no conflict between their marital status and the performance of their duties in school. However, this finding was negated by Abarro (2018) in his study among public school teachers in the Division of Antipolo City, Philippines. The result showed that the civil status affects teachers' performance as evidenced in their performance ratings.

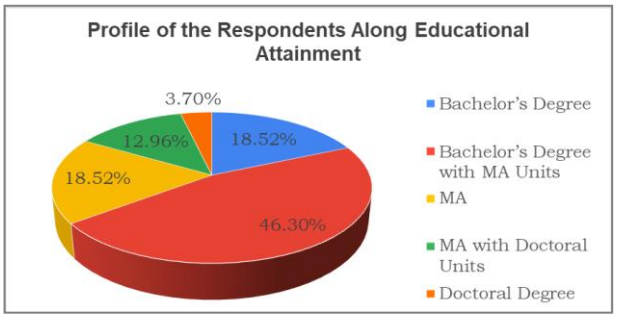

Figure 4. Profile of the Respondents Along Educational Attainment

Figure 4 showcases the educational attainment of Junior High School Mathematics teachers in Unit III of SDO Ilocos Sur. Based on the figure, 46.30 percent of the teachers are Bachelor's degree holder with MA units. Both respondents with only a bachelor's degree have the same rate as that of those who have finished their master's degree, which is 18.52 percent. Notably, only 3.70 percent of the respondents finished their doctoral degrees. The result shows that most teachers are seeking personal development in terms of educational advancement. This continuing professional development help them uplift their competence level as teachers. Other than that, it is also crucial in their career progression especially that education is one of the criteria in upgrading teaching positions.

This was also evident in the study of Abarro (2018) wherein teachers' performance relies on the educational attainment and academic achievement of teachers. In addition, Bural & Basaran (2021) also claimed that the most important purpose of teachers doing a master's degree is to increase their knowledge in the field. It is for personal development and academic career advancement.

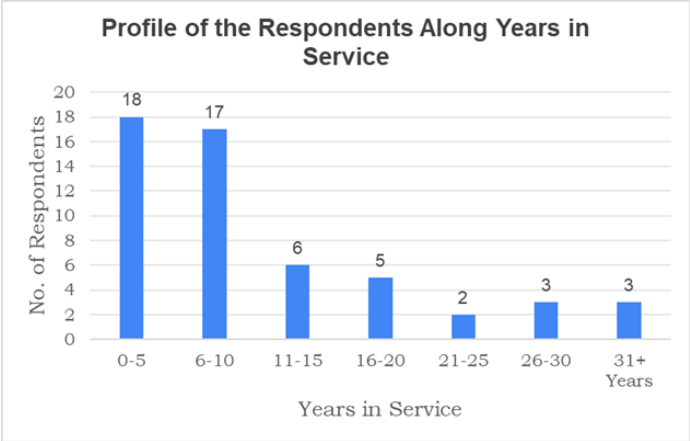

Figure 5. Profile of the Respondents Along Years in Service

Figure 6 depicts the number of years of service of the teachers in the public school. The graph shows that more than half of the teachers have 10 or lesser years of service in the public-school setting, 18 teachers have 0-5 years in the public school while 17 have 6-10 years teaching experience in the public-school totalling to 35 out of 54. In addition, experienced teachers with that of 11 years or more teaching experience are only 19 out of 54 in total.

This implies that majority of the mathematics teachers are new in the field or at least in public schools. Teaching experience plays an important role in teaching effectiveness. Years of experience allows them to gain ample knowledge on how to teach different kinds of students. Thus, giving them a lot of ideas and strategies on how to develop and execute their lessons according to students' interests and abilities. Thereby, upholding higher teacher efficacy and competence for that matter.

According to Podolsky, et al (2019), teaching experience is really connected with teacher effectiveness. The more experienced the teachers are, the more effective they become. Significantly, teachers continue to enhance in their effectiveness in nurturing student achievement after the first decade of teaching. Additionally, teachers continue to provide better learning to students on the second and third decade of teaching experience. Moreover, collaboration among teachers is highly relevant. It increases students' achievement as experienced teachers support less experienced teachers in achieving educational objectives.

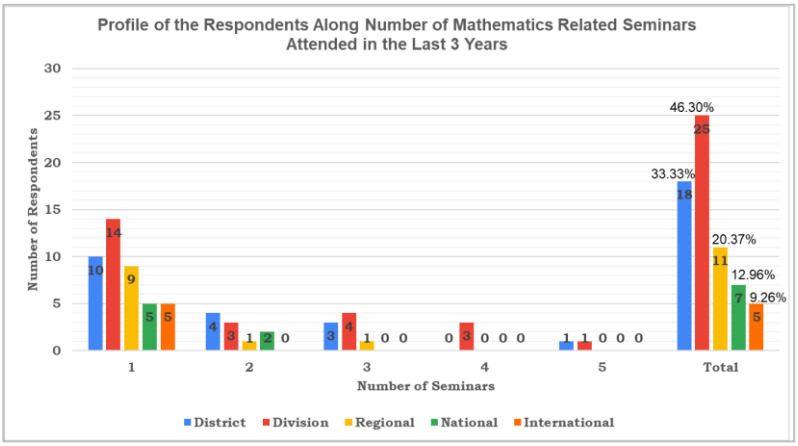

Figure 6. Profile of the Respondents Along Number of Mathematics Related Seminars Attended in the Last 3 Years

Figure 6 indicates the number of Mathematics related seminars attended by the teachers in the last three years. As the graph shows, over the last three years, only few teachers have a chance to attend seminars related to Mathematics, not even half of the respondents were sent to Division seminars as shown by 46.30 percent data, which is by far has the highest percentage. Only 33.33 percent of the teachers attended district seminars, which comes second. Lastly, only few teachers have opportunities to join Regional, National and International seminars. The rest of the teachers had never attended a seminar related to Mathematics for the last three years. This implies that while teachers are competent enough to teach the subject, they lack opportunities for advancement aside from pursuing masteral and doctoral degrees. They do not have enough chances to uplift what they know so that they can cope up with the new trends in teaching. This may be due to the inadequacy of budget allocated for trainings of all teachers.

This was also evident in the study of Refugio, et. al (2019), wherein Mathematics teachers in the Schools Division of Dumaguete City were only sent to local seminars due to small budgets allocated from the Maintenance and Other Operating Expenses as stipulated in DepEd Order No. 13. S. 2016. Also, few are sent to regional and national trainings while others have less than 3 or no seminars at all.

On the other side, teachers who often attend training expand their understanding and abilities improving their performance. Training programs are essential to all teachers, beginning or experienced teachers, in order to uplift their performance. Trainings and teaching competence has a positive and significant impact on teachers' performance (Qomariah & Endangmustikawati, 2020).

2. Level of Teaching Competence of Mathematics Teachers

Table 1. Level of Teaching Competence Along Dedication to Teaching

Dedication to Teaching	Weighted Mean	DR
1. Develops one's own competency as a Mathematics teacher.	4.19	HC
2. Possesses a positive attitude about life and in teaching Mathematics	4.56	VHC
3. Spends time for community outreach	3.50	HC
4. Accepts responsibility for student outcome	4.50	VHC
5. Seeks professional development such as in-service courses, projects, and conferences in the mathematics area	4.19	HC
6. Finds, implements, and shares new instructional strategies	4.17	HC
7. Knows areas of personal strengths and weaknesses	4.48	VHC
8. Uses reflection to improve mathematics teaching and needs for development	4.39	VHC
9. Sets high expectations for personal classroom performance	4.31	VHC
10. Keeps oneself updated about new developments and trends in mathematics research practice.	4.19	HC
Overall Weighted Mean	**4.25**	**VHC**

Legend: 4.21 – 5.00 Very Highly Competent (VHC) 3.41 – 4.20 Highly Competent (VC)

Table 1 displays that the highest competency among Mathematics teachers is about possessing a positive attitude about life and in teaching Mathematics with a mean of 4.56 and a descriptive rating of Very Highly Competent. Meanwhile, the lowest mean 3.50 with a descriptive rating of highly competent is on spending time for community outreach. The overall mean of 4.25 with a Very Highly Competent descriptive rating indicates that teachers are dedicated to their job and that they go the extra mile in order to attain their teaching goals. However, on the areas with descriptive rating of Highly Competent, there are still things that need to be done in order to raise their ratings. No matter how very highly competent a teacher is, there are still areas that need to be worked out. These competencies include: (1) spending time for community outreach; (2) finding, implementing, and sharing new instructional strategies; 3) seeking professional development such as in-service courses, projects, and conferences in the mathematics area; (4) developing one's own competency as a Mathematics teacher; and (5) keeping oneself updated about new developments and trends in mathematics research practice.

As teachers, their job does not only revolve around the classroom, it extends far beyond the classroom. Dedicated teachers find ways in order to improve their craft be it professional development, doing action researches, attending different trainings and seminars, or sharing and collaborating with colleagues. The role of teachers is crucial to the growth and development of every learner. Thus, teachers should be as highly dedicated as they can be in order to foster progress among their students.

These findings were strengthened by Turk and Korkmarz (2022), wherein teachers were assessed to be high in terms of professional dedication, professional commitment, and attitude towards teaching profession.

Table 2 presents the level of teaching competence of Mathematics teachers in terms of knowledge of subject matter. The overall mean of 4.41 indicates that the teachers are Very Highly Competent in terms of Knowledge of the Subject Matter. Likewise, all competencies under the criterion gained a Very Highly Competent descriptive rating. This only means that teachers are all expert in the field of Mathematics. This is of course due to the fact that they have gained enough knowledge in their bachelor's degree. Furthermore, having accepted to the Department of Education meant that they exude the qualifications of a teacher. Also, the result means that teachers know what they teach and how to teach it. They understand the subject matter deeply that they are able to analyze and assess the topics and know how to deliver them using varied activities according to students' knowledge and capabilities. This is vital in the teaching profession because without deep understanding on what to teach leads to unmet teaching competencies. It is then expected that every teacher is an expert in their field.

Table 2. Level of Teaching Competence Along Knowledge of the Subject Matter

Knowledge of Subject Matter	**Weighted Mean**	**DR**
1. Analyzes, assesses, relates to, and implements existing Mathematics curricula and syllabi and construct new ones.	4.44	VHC
2. Masters Mathematics modes of thought	4.44	VHC
3. Communicates within and about Mathematics.	4.52	VHC
4. Detects, formulates, delimitates and specifies Mathematical problems, pure or applied	4.37	VHC
5. Integrates topics discussed in the lesson and relates them to concepts previously learned by the students in the same course	4.56	VHC
6. Analyzes and builds Mathematical models and utilizes different kinds of representations of Mathematical entities.	4.33	VHC
7. Relates the subject matter to other pertinent topics	4.50	VHC
8. Raises problems and issues relevant to the topic(s) of discussion	4.37	VHC
9. Is able to handle symbol language and formal Mathematical system	4.28	VHC
10. Balances variety and challenge in students' activities	4.31	VHC
Overall Weighted Mean	**4.41**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC)

This result also links to the result in table 8 dedication to teaching wherein it gained a highly competent rating. When the teacher is dedicated, they find ways in improving their craft and that also entails mastery of the subject matter. In fact, Serin (2023) stressed that knowledge of the subject matter and skills in teaching are important for teachers and that dedicated teachers works out to improve their methods of teaching for better learning results.

Additionally, Flores (2019) conveyed that knowledge of the subject matter influences the performance of students in all grades. The more knowledgeable the teacher is, the more capable she becomes in teaching the subject with full command.

Table 3. Level of Teaching Competence Along Classroom Organization and Management

Classroom Organization and Management	Weighted Mean	DR
1. Orchestrates smooth transitions and continuity of classroom momentum	4.39	VHC
2. Organizes multi-task properly	4.28	VHC
3. Is aware of all the activities in the classroom	4.50	VHC
4. Anticipates potential problems	4.30	VHC
5. Uses space, proximity, or movements around the classroom for nearness to spot trouble and to encourage attention	4.35	VHC
6. Handles routine tasks promptly, efficiently, and consistently	4.48	VHC
7. Organizes classroom space efficiently	4.52	VHC
8. Interprets and responds to inappropriate behavior promptly	4.54	VHC
9. Implements rules of behavior fairly and consistently	4.59	VHC
10. Uses appropriate disciplinary measures.	4.52	VHC
Overall Weighted Mean	**4.45**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC*)*

Table 3 presents the level of teaching competence of Mathematics teachers in terms of classroom organization and management. The table reveals a Very Highly Competent descriptive rating with an overall mean of 4.45. Also, all competencies resulted to the same descriptive rating. This indicates that Mathematics teachers in Unit III are able to organize and manage the classroom accordingly. They are mindful of all classroom activities and effectively implements classroom rules and routines. They can also handle inappropriate behaviours fittingly and applies proper disciplinary actions. They can troubleshoot problems that may arise in the classroom because they can foresee possible glitches. This is an indication that teachers foster positive classroom environment. The kind of surrounding needed for better learning outcome.

In the same light, Sorbeto, et. al (2022), also proved that classroom routine and classroom discipline are important facets in classroom management. Maintaining these promotes classroom management influencing effective learning outcomes.

Table 4. Level of Teaching Competence Along Instructional Organization

Instructional Organization	Weighted Mean	DR
1. Focuses classroom time on teaching and learning	4.57	VHC
2. Links instruction to real-life situations of the students	4.48	VHC
3. Devises, plans, organizes, orchestrates, and carries out Mathematics teaching	4.52	VHC
4. Makes use of aids and tools and relates these to Mathematics	4.50	VHC
5. Maintains momentum within and across the lesson	4.41	VHC
6. Orients the classroom experience toward improvement and growth	4.44	VHC
7. Carefully links learning objectives and activities	4.50	VHC
8. Organizes content for effective presentation	4.52	VHC
9. Considers student's attention span and learning styles when designing lesson	4.50	VHC
10. Develops objectives, questions, and activities that reflect the higher and lower level of cognitive skills appropriate for the content needed by the students on a regular basis	4.41	VHC
Overall Weighted Mean	**4.49**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC)

Table 4 presents the level of teaching competence of Mathematics teachers in terms of instructional organization. It could be inferred from the table that the overall mean 4.49 indicates a Very Highly Competent descriptive rating for Instructional Organization. In addition, all the competencies under the criterion gained a Very Highly Competent descriptive rating gaining a mean of 4.41 to 4.57. This implies that the teachers are highly skilled in preparing and using different tools and activities for classroom teaching. They are also highly proficient in developing activities that caters lower level to higher level of reasoning skills among students, which is a must in teaching Mathematics subjects. They are likewise well-trained in connecting

learning goals and activities taking into consideration students' attention span and learning styles. Thus, promoting maximum learning results.

Damanik & Widodo (2024) asserted the beneficial association between educators' professional performance and teaching creativity. The ability of educators to reframe original or creative notions related to approaches, techniques, tactics, forms, and resources for instructional activities within the learning process is known as teaching creativity. The empirical data in their study also confirms that instructors' professional performance will improve if they continue to foster and cultivate creativity in their teaching. Teachers can become more proficient in their subjects and transfer knowledge more effectively by increasing their fluency, flexibility, inventiveness, elaboration, and re-definition of different teaching assignments.

Moreover, understanding each student's unique learning style is the first step towards raising the academic achievement of students in mathematics. Teachers can benefit greatly from knowing their students' learning preferences when creating and implementing a customized lesson plan. Teachers will be guided in creating various tactics by realizing the diversity of their students and their distinct learning styles (Cardino & Cruz, 2020).

Table 5. Level of Teaching Competence Along Instructional Implementation

Instructional Implementation	Weighted Mean	DR
1. Employs different techniques and instructional strategies, such as hands-on learning	4.46	VHC
2. Handles different representations of Mathematical entities	4.32	VHC
3. Stresses meaningful conceptualization, emphasizing the student's own knowledge of the world and his learning environment	4.37	VHC
4. Stresses students' responsibility and accountability	4.44	VHC
5. Teaches meta cognitive strategies to support reflection on learning process	4.20	HC
6. Emphasizes higher order thinking skills in mathematics	4.35	VHC
7. Varies question type to maintain interest and momentum	4.41	VHC
8. Is able to reason out Mathematically	4.48	VHC
9. Varies instructional strategies, types of assignments, and activities	4.56	VHC
10. Leads, directs, and paces student activities	4.50	VHC
Overall Weighted Mean	**4.41**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC) 3.41 – 4.20 Highly Competent (HC)

Table 5 presents the level of teaching competence of Mathematics teachers in terms of instructional implementation. It can be construed from the table that the overall mean for Instructional Implementation is 4.41 which is equivalent to Very Highly Competent. Except for the competency "Teaches meta cognitive strategies to support reflection on learning process" which yielded to Highly Competent descriptive rating, all other competencies resulted to a Very Highly Competent rating.

This suggests that teachers highly take their instructional responsibilities and see to it that students achieve maximum learning outcome. They implement different teaching strategies and techniques stressing higher order thinking skills, and reasons out mathematically. The implementation of instruction makes or unmakes learning outcomes. The ability of teachers to do so creates a huge impact in the achievement of learning goals. A successful lesson implementation is a mixture of methods and strategies depending on the students' abilities, interests, and knowledge. It is the responsibility of the teacher to direct and lead students towards achieving educational objectives.

There is also a need to emphasize reflective thinking through the use of different metacognitive strategies. This will allow learners to think about what they have learned and how to apply them in their lives.

Lastly, Hornby & Greaves (2022) defined metacognitive strategies are methods that assist students in better understanding and using their learning process. They also claimed that by facilitating students' faster acquisition of new knowledge and abilities, educators who employ metacognitive teaching techniques can have a favorable impact on their learners. Thus, to assist students in developing efficient study techniques, teachers ought to use these tactics to increase students' self-awareness.

Table 6. Level of Teaching Competence Along Monitoring Student Progress and Potential

Monitoring Student Progress and Potential	Weighted Mean	DR
1. Clearly explains homework	4.65	VHC
2. Relates homework to the content under study and to student capacity	4.67	VHC

3. Identifies, assess, and characterizes student learning outcomes and competencies	4.59	VHC
4. Discusses grades, comments and homework in class	4.56	VHC
5. Thinks possible misconceptions that may occur during instruction and correct students on these misconception	4.50	VHC
6. Gives clear, specific and timely feedback	4.46	VHC
7. Re-teaches students who did not achieve mastery and offers tutoring to students who seek additional help	4.26	VHC
8. Uncovers, interprets and analyzes students learning of Mathematics as well as their notions, beliefs and attitudes towards Mathematics	4.35	VHC
9. Monitors and assess students' progress	4.65	VHC
10. Knows and understand students as individuals in terms of ability, achievement, learning styles and needs.	4.54	VHC
Overall Weighted Mean	**4.52**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC)

Table 6 presents the level of teaching competence of Mathematics teachers in terms of monitoring student progress and potential. The table reflects the overall mean of 4.52 under monitoring student progress and potential. This denotes a Very Highly Competent rating. Furthermore, all competencies under this category also resulted to a Very Highly Competent descriptive rating. This signifies that teachers religiously monitor students' learning and give timely feedback for better learning results. They reteach the lesson when necessary and offer tutorial to students who struggles in the subject. They are able to give appropriate assignments for reinforcement to help students understand the lesson better. They also recognize the individuality of each learner thus providing learning opportunities suited to their learning needs.

Teachers need to see how students perform in their class so as to provide timely and appropriate feedback. These feedbacks are important so that appropriate measures can be done especially that most competencies in mathematics are prerequisites to succeeding lessons. Without students' mastery, the learning objectives will not be met and it is a domino effect when they start another lesson without mastery of the previous one.

In the study of Selvaraj et. al (2021) feedback's effectiveness in enhancing students' educational experiences has been demonstrated. Hence, the analysis confirmed that the practice of professors providing feedback is relevant in guaranteeing that students are aware of their academic progress. Feedback promotes balance in the way teachers and students approach instruction in order to meet students' academic levels. instruction and learning are two-way processes involving teachers and students. In addition to providing students with information about their academic achievement, teachers can use feedback to consider how they are implementing their teaching strategies since they need to make sure that they can adapt their teachings to meet the needs of all of their students.

Table 7. Level of Teaching Competence

Teaching Competencies	Weighted Mean	DR
Dedication to Teaching	4.25	VHC
Knowledge of Subject Matter	4.41	VHC
Classroom Organization and Management	4.45	VHC
Instructional Organization	4.49	VHC
Instructional Implementation	4.41	VHC
Monitoring Student Progress and Potential	4.52	VHC
Overall Weighted Mean	**4.42**	VHC

Legend: 4.21 – 5.00 Very Highly Competent (VHC)

Table 7 presents the overall level of teaching competence of the teachers. It could be gleaned from the table that the overall mean of the level of teaching competence of the teachers is 4.42 with a descriptive rating of very highly competent. Likewise, all competencies garnered the same descriptive rating.

This suggests that teachers are aware of their duties and responsibilities and carries them religiously. They are able to devote enough time, efforts and resources to promote student learning. They also implement instruction to the best of their abilities. This is an advantage not only on the part of students but also to the entire education department. With this, school

administrations must give their full support to teachers so that they can maintain if not enhance their already high level of competence.

Bhullar (2019) emphasized that in order to effectively and efficiently shape their pupils into model democratic citizens, educators must possess these qualities as well as be outstanding, knowledgeable, and committed to their work. Self-efficacy is one of the important and influencing elements for improving teaching proficiency. To increase teachers' teaching proficiency and self-efficacy views, in-service programs, workshops, and seminars can be created for them.

3. Relationship Between Teachers' Profiles and Level of Competence

Table 8. Relationship Between Teachers' Profiles and the Level of Dedication to Teaching

Profile	r-value	p-value	Interpretation	Decision
A. Age	0.365	0.007	S	Reject H_0
B. Gender	0.028	0.839	NS	Accept H_0
C. Civil Status	0.102	0.461	NS	Accept H_0
D. Educational Attainment	0.117	0.401	NS	Accept H_0
E. Years in Service	0.317	0.019	S	Reject H_0
F. Seminars Attended	0.248	0.071	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant S-Significant

Table 8 presents the relationship between the profiles of the teachers and their dedication to teaching. Looking at the table, age is significantly related to the teachers' level of dedication to teaching as signified by the p-value of 0.007, which is lesser than 0.05 level of significance. The r-value of 0.365 also indicates that there is a positive relationship between the two variables. Furthermore, years in service and dedication to teaching also has a significant positive relationship as indicated by the r-value of 0.317 and p-value of 0.019. The rest of the variables such as gender, civil status, educational attainment, and seminars attended resulted to insignificant relationship with the level of dedication to teaching.

The result only means that as the teachers age and acquires years of experience in the service, their level of dedication to teaching also increases. As teachers gain experience in teaching, they are able to see the things that matters in teaching and one of that is going beyond what teaching inside the classroom calls. They are able to see the benefit of teaching and finds ways to improve themselves and extend their service outside the four walls of the classroom.

In the study of Calleja & Averion (2020), there was also a positive relationship between the commitment level of junior high school teachers and their profiles in terms of age and years in service.

However, this was in contrary to the result of the study of Cagape, et. al (2021) about work commitment among secondary public-school teachers in Davao City, which turned out that age has nothing to do with their devotion to teaching.

Table 9 displays the result of the relationship between the profile of the teachers and their level of knowledge of the subject matter. It could be inferred from the table that age and years in service resulted to a positive significant relationship to the level of knowledge of the subject matter. This was indicated by 0.354 r-value and 0.009 p-value for age and 0.284 r-value and 0.038 p-value for years in service. In contrast, the variables gender, civil status, educational attainment, and seminars attended posed an insignificant relationship to the knowledge of the subject matter.

Table 9. Relationship Between Teachers' Profile and Level of Knowledge of Subject Matter

Profile	r-value	p-value	Interpretation	Decision
A. Age	0.354	0.009	S	Reject H_0
B. Gender	0.043	0.758	NS	Accept H_0
C. Civil Status	0.105	0.451	NS	Accept H_0
D. Educational Attainment	0.202	0.143	NS	Accept H_0
E. Years in Service	0.284	0.038	S	Reject H_0
F. Seminars Attended	0.192	0.163	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant S-Significant

The outcome implies that as the teachers grow old in the service, they gain more knowledge that helps them in fulfilling their duties as Mathematics teachers. As the teachers educate, they are also exposed to different mathematical problems,

models, and entities that they have not encountered in their formal education. Thus, giving them broader knowledge of the subject matter.

Cochran (2018) also emphasized that as teachers mature in the teaching service, what they know about the subject matter and how they teach it develops.

Table 10. Relationship Between Teachers Profile and Level of Classroom Organization and Management

Profile	r-value	p-value	interpretation	decision
A. Age	0.301	0.027	S	Reject H_0
B. Gender	-0.034	0.806	NS	Accept H_0
C. Civil Status	0.037	0.792	NS	Accept H_0
D. Educational Attainment	-0.052	0.709	NS	Accept H_0
E. Years in Service	0.212	0.123	NS	Accept H_0
F. Seminars Attended	-0.035	0.801	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant S-Significant

Table 10 reveals the relationship between the profiles of the teachers and their level of classroom organization and management. It was presented on the table that age has a positive significant relationship to the level of classroom organization and management of the teachers as indicated by the r-value of 0.301 and p-value of 0.027. The rest of the profile variables lead to insignificant relationship as manifested by the p-value of more than 0.05.

This suggests that the older the teacher, the higher is the level of classroom management. Older teacher had gained insights as to how the classroom should be ran. They dealt with a lot of students in the past. These students are uniquely different from each other. Thus, older teachers already learned how to discipline different sorts of behavior. Likewise, they have already established a routine that they find effective in managing the classroom over the years.

This was backed up by the study of Lesha (2017), wherein teachers' effectiveness in classroom management is influenced by age. As time goes by, teachers classroom organization also improve.

Moreover, Amadi & Allagoa (2017) pointed out that years of teaching experience have clearly played a crucial role in enhancing their abilities to manage the classroom effectively.

Table 11. Relationship Between Teachers' Profile and Level of Instructional Organization

Profile	r-value	p-value	interpretation	decision
A. Age	0.216	0.116	NS	Accept H_0
B. Gender	-0.069	0.622	NS	Accept H_0
C. Civil Status	-0.005	0.970	NS	Accept H_0
D. Educational Attainment	-0.067	0.630	NS	Accept H_0
E. Years in Service	0.231	0.092	NS	Accept H_0
F. Seminars Attended	-0.043	0.759	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant

Table 11 exhibits the relationship between teachers' profile and their level of instructional organization. It could be deduced from the table, that the profiles of the teachers have no significant relationship to the level of instructional organization as revealed by their p-values, which are all greater than 0.05. This denotes that regardless of background, teachers can prepare and plan their teaching plans soundly. No matter what age, whether married or not, has enrolled in postgraduate studies or not, old or new in the profession, has attended seminars or not, they are able to devise their lessons according to the curriculum and standards as well as learning styles of the students.

Albeit, this is in contrary to the claim of Konig et. al (2020) in which research on teacher expertise indicates that experienced teachers, as opposed to inexperienced ones, approach lesson planning in a methodical manner. Instead of following a linear sequence, skilled teachers can take into account multiple planning factors at once. Specifically, expert teachers carefully align their students' learning tendencies with the selected learning activities for the lesson.

Table 12. Relationship Between Teacher's Profile and Level of Instructional Implementation

Profile	r-value	p-value	interpretation	decision
A. Age	0.340	0.012	S	Reject H_0
B. Gender	-0.104	0.455	NS	Accept H_0
C. Civil Status	0.151	0.276	NS	Accept H_0
D. Educational Attainment	0.101	0.469	NS	Accept H_0
E. Years in Service	0.362	0.007	S	Reject H_0
F. Seminars Attended	0.070	0.614	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant S-Significant

Table 12 presents the relationship between the profile of the teachers to their level of instructional implementation. Based on the data, age and years of service established a significant relationship as in indicated by their p-value of 0.012 and 0.007, respectively. Furthermore, it indicates a positive relationship as evidenced by their r-values of 0.340 and 0.362, respectively.

The result suggests that as the teachers aged and as they gain experiences in the academe, their level of instructional implementation progresses. As teachers mature, they are able to widen their understanding of the world they fit in. This means that they are able to understand their learners better and employ different strategies to help their students improve their learning. Their experiences also give them different ideas and techniques on how to implement their teaching. Over the years, they are able to find ways on how to tailor the activities and teaching pedagogies to the students' skills and capabilities.

This was in contrast with the study of Pranoto et. al (2021) wherein they claimed that there is no substantial relationship between the age ranges of educators and their teaching experiences in relation to the quality of teaching performance.

Table 13. Relationship Between Teachers' Profile and Level of Monitoring Student Progress and Potential

Profile	r-value	p-value	interpretation	decision
A. Age	0.160	0.247	NS	Accept H_0
B. Gender	-0.123	0.374	NS	Accept H_0
C. Civil Status	-0.042	0.763	NS	Accept H_0
D. Educational Attainment	-0.042	0.763	NS	Accept H_0
E. Years in Service	0.179	0.195	NS	Accept H_0
F. Seminars Attended	-0.135	0.331	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant

Table 13 reveals the relationship between the teachers' profile and their level of monitoring student progress and potential. The table shows no significant relationship between the profiles of the respondents to the level of monitoring student progress and potential. This implies that monitoring and assessing students' learning outcomes has nothing to with the teachers' age, gender, civil status, educational attainment, years in service, and seminars attended. This is an embedded part of teachers' responsibility in the classroom which do not require high educational attainment or rigid teaching experience.

Nessipbayeva (2023) stated that part of 21st century teaching competencies are assessing and reflecting of students' learnings. Educators effectively evaluate student learning by employing a variety of indicators, encompassing both formative and summative assessments, to track and assess student progress while guiding instructional strategies. They examine student performance through data analysis, which offers insights into potential improvements in student learning outcomes.

Table 14. Relationship Between Teachers' Profile and the Level of Teaching Competence

Profile	r-value	p-value	interpretation	decision
A. Age	0.350	0.020	S	Reject H_0
B. Gender	-0.050	0.594	NS	Accept H_0
C. Civil Status	0.071	0.699	NS	Accept H_0
D. Educational Attainment	0.054	0.783	NS	Accept H_0
E. Years in Service	0.319	0.048	S	Reject H_0

F. Seminars Attended	0.063	0.596	NS	Accept H_0

Legend: 0.05 Level of Significance NS-Not Significant S-Significant

Table 14 presents the relationship between the profile of the teachers and their level of teaching competence. It could be gleaned from the table that age and years of service have significant positive relationship to the level of teaching competence of the teachers. This is manifested on the p-values of 0.020 and 0.048 and r-values of 0.350 and 0.319 respectively.

This indicates that as the teacher gets older and extends educational duties in school, their level of teaching competence increases. As they gain experience, they also acquire knowledge and pedagogies which can help them in their teaching journey. Thus, increasing their competence level. They likewise learn to embrace their vocation. Thus, dedicating a part of themselves, not only to their job as teachers, but also outside the school premises carrying the emblem of being an educator. Their years in service lead them to meet different learners with different learning needs. Hence, giving them ideas on how to manage individuals with different personalities and upbringing.

The result was in contrast with the study of Aperocho & Bogo (2023), in which they claim that teaching experience do not affect teaching competence.

4. In-Service Training Program

Based from the results and findings of the study and the comments and suggestions of the validators, the following in-service training program was crafted:

Title: MATHEMATICS IN-SERVICE TRAINING PROGRAM	**Schedule of Implementation:** November 26-29, 2024	**Proponent:** LAILANI A. PASCUAL, Teacher III
Project Location	Santa Maria, Ilocos Sur	
Goals and Objectives	Improve content and pedagogical competence of the Junior High School Mathematics Teachers through series of lectures and workshops about Mathematics Teaching. 1. Know different metacognitive strategies and how they are used in teaching mathematics. 2. Update teachers on new trends and developments in Mathematical researches. 3. Provide opportunity to collaborate with their fellow teachers on their best teaching practices. 4. Unpack mathematical competencies based on the common least mastered competencies. 5. Find inspiration from Mathematics Teacher involve in different community outreach programs in order to extend mathematics teaching beyond the school community. 6. Study digital ways in teaching mathematics and make daily lesson log for classroom implementation.	
Implementation Unit	UNIT III, Schools Division of Ilocos Sur (District of Narvacan, Nagbukel, Santa Maria, Burgos, Santiago, San Esteban, Lidlidda, and San Emilio)	
Rationale	The field of education is constantly evolving, and Mathematics Education is no exception. Teaching Mathematics is currently undergoing significant changes due to pressure for reform from various sectors. (Flores, 2019). Now, that another curriculum was launched by DepEd, changes are expected to ripple in Mathematics teaching especially the onset of the National Mathematics Program. This entails teachers' competence to be able to meet the rapid changing educational system. However, with the lack of continuing education programs aside from graduate degree courses, training programs and seminars are the most viable assistance the department could offer. Programs and trainings for teachers must be tailored to the areas in which they need to advance. Schools must work with the Department of Education to plan and distribute high-quality instruction while also providing teachers with the design for successful instructional enhancement programs that would increase their teaching abilities and pedagogical content understanding (Gamayao & Biñas, 2021). DepEd Order 009 s. 2024 also known as Implementing Guidelines on the School Calendar and Activities for School Year (SY) 2024-2025 defined In-Service Training (INSET) as a professionally accredited development program designed to enhance the skills of educators. This program can be implemented at the school level (school-based INSET) or at the division or district level (cluster-based INSET). Its primary aim is to address specific needs identified by teachers or school leaders, thereby fostering ongoing	

improvement in their professional competencies.

Based on the result of the foregoing study titled "COMPETENCE LEVEL OF 21ST CENTURY MATHEMATICS TEACHERS IN UNIT III OF SCHOOLS DIVISION OF ILOCOS SUR: BASIS FOR IN-SERVICE TRAINING PROGRAM," there are competencies in which Junior High School Mathematics teachers in Unit III need to improve on. These competencies include (listed from least to highest priority): (1) teaching meta cognitive strategies to support reflection on learning process; (2) keeping oneself updated about new developments and trends in mathematics research practice; 3) seeking professional development such as in-service courses, projects, and conferences in the mathematics area; (4) developing one's own competency as a Mathematics teacher; (5) finding, implementing, and sharing new instructional strategies; and (6) spending time for community outreach.

Taking into consideration the significant relationship of the teachers' age and years of service to their competence level, this training program will address the overall needs of this young breed of Mathematics teachers, who belong to the digital age and with minimal years of teaching experience, to improve as well as maintain their high level of teaching competence.

The competencies and session topics created are likewise in line to the RPMS-PPST indicators for proficient teachers as reflected on the table below:

Competencies	**Session Topics**	**RPMS-PPST Indicators**
1. Teaches meta cognitive strategies to support reflection on learning process	Metacognitive Strategies in Teaching Mathematics	Applied a range of successful strategies that maintain learning environments that motivate learners to work productively by assuming responsibility for their own learning. (PPST 2.5.2)
2. Keeps oneself updated about new developments and trends in mathematics research practice	Trends and Developments in Mathematical Researches	Used research-based knowledge and principles of teaching and learning to enhance professional practice. (PPST 1.2.2)
3. Seeks professional development such as in-service courses, projects, and conferences in the mathematics area	Collaborative Expertise: Sharing of Best Practices in Teaching Mathematics	Used a range of teaching strategies that enhance learner achievement in literacy and numeracy skills. (PPST 1.4.2)
4. Develops one's own competency as a Mathematics teacher.	Unpacking Common Least Mastered Competencies in Mathematics	Establish a learner-centered culture by using teaching strategies that respond to their linguistic, cultural, socio-economic and religious backgrounds. (PPST 3.2.2)
5. Finds, implements, and shares new instructional strategies	Digital Innovation Strategies in Teaching Mathematics	Ensured the positive use of ICT to facilitate the teaching and learning process. (PPST 1.3.2)
6. Spends time for community outreach	Going the Extra Mile	Performed various related works /activities that contribute to the teaching-learning process.

Activities

Session 1 Metacognitive Strategies in Teaching Mathematics

- Facilitator shares different metacognitive strategies like thinking routines, mathematical language routines, using rubrics, graphic organizers, number talks and strings, guided discussion, reciprocal teaching, problem-solving skills that promote reflective thinking among students.
- Speaker assists teacher-participants in creating a plan of action on how they can use metacognitive strategies in teaching the subject.

  Output: Sample Daily Lesson Log Using Metacognitive Strategies in the classroom

Session 2 Trends and Developments in Mathematical Researches

	• Speaker provides enough information and about the latest trends and developments on researches about mathematics such as the influence of digital technology, innovative pedagogical strategies, the role of mathematics education in enhancing student performance, inquiry-based learning, the use of games and gamification, as well as considerations of equity, diversity, and inclusion. • Lecturer facilitates collaboration of teachers on possible topic for research in their district. Output: Research Simulacrum **Session 3** Collaborative Expertise: Sharing of Best Practices in Teaching Mathematics • Speaker shares best practices in mathematics instruction proven to be effective in general setting. • Presenter facilitates focus group discussion on best practices especially the older generation of teachers to the new ones and vice versa. Output: List of best teaching strategies which can be applied in their classrooms **Session 4** Unpacking Common Least Mastered Competencies in Mathematics • Speaker presents the list of most common least mastered competencies sent by teachers per quarter. • Speaker facilitates the crafting/unpacking of competencies. Output: Unpacked competencies in Mathematics **Session 5:** Going the Extra Mile • What it Takes to be a Princess Maha Chakri Awardee Speaker shares journey on how he was able to receive the award for the prestigious Princess Maha Chakri Award in Southeast Asia through his mathematics outreach program and how it changed the lives of his beneficiaries. Output: Reflection of teachers on the extent of teaching practice outside the school • Suggested Innovations and Income Generating Projects in Mathematics • Suggested Community Outreach Programs in Mathematics Speaker shares different innovations and IGP in mathematics including templates which can be modified by teachers in their work stations. Output: One proposed Mathematics Innovation/IGP per district **Session 6** Digital Innovation Strategies in Teaching Mathematics • Use of Desmos for Problem Solving Speaker demonstrates the use of Desmos in Mathematics problem solving while teachers are doing hands on activities. Output: Hands on Activity sent through email • Use of Desmos for Mathematical Investigation Speaker demonstrates the use of Desmos in Mathematical Investigation while teachers are doing hands on activities. Output: Hands on Activity output sent through email • Use of Geogebra Speaker demonstrates the use of Geogebra in geometry and algebra topics while teachers are doing hands on activities. Output: Hands on Activity output sent through email Overall Output: Daily lesson log applying Desmos and Geogebra in Teaching Mathematics.
Beneficiaries	18 Junior High School Mathematics Teachers This in-service training program will increase and reinforce their teaching competencies in mathematics.
Source of Fund	Sponsorship/Donation, Venue in partnership with ISPSC Santa Maria Campus
Project Management	5 School Heads from Unit III

Team	

Budgetary Requirements:

ITEM	DESCRIPTION	QUANTITY	UNIT COST	TOTAL
Training Materials	Training Kits, Printed Activity Sheets/ Handouts, Certificates	18	150	2 700
Tokens and Stipends of Speakers	Education Program Supervisors	2	5000	10 000
	Master Teacher	1	4000	4000
	Teachers	2	3000	6000
Snacks	AM and PM snacks of participants, facilitators and speakers (23x4daysx2)	92	75	6 900
Meals	Lunch of participants, facilitators and speakers (23x4days)	92	200	18 400
Contingency Fund	Extra funds for emergency purposes	1	2000	2 000
Total				**50 000**

Reporting and Evaluation

IN SERVICE TRAINING PROGRAM EVALUATION

November 26-29, 2024

NOTE: This form is to be answered by participants at the end (Last day) of the entire Training. *Required

- Name (Optional) _____ • Gender O Male O Female
- District * _____ • Venue *_____
- Learning Service Provider _____

I. Program Evaluation

	Strongly Agree	Agree	Disagree	Strongly Disagree
A. SPEAKER*				
1. The speaker started on time.				
2. The speaker ended on time				
3. The information I got from the session is relevant.				
4. The organization and sequence of topics facilitated my learning.				
5. The time allotted for the session was sufficient for me to absorb and accomplish outputs.				
6. The facilitator's clear and substantive presentation of topic contributed to my learning.				
7. I was engaged because of the facilitator's skills in facilitating discussions.				
8. I felt comfortable to participate in the discussions and activities because of the facilitator's skills in responding to my questions.				
9. The facilitator's skills in use of delivery support materials (slide decks/PowerPoint presentation) aided my learning.				
10. Facilitator maintained positive learning				

	environment.				
	B. DELIVERY OF CONTENT *				
	1. Program content was appropriate to trainees' role and responsibilities				
	2. Content delivered was based on reliable sources.				
	3. Session activities were effective in generating learning				
	4. Program followed a logical order / structure.				
	5. Contribution of all trainees was encouraged through question and answer				
	C. TRAINING VENUE*				
	1. Adequately lit				
	2. Well-ventilated				
	3. Adequate soundproofing				
	4. With Sufficient space				
	5. Clean				
	6. Equipment was serviceable				
	7. Clean comfort rooms				
	D. MEALS*				
	1. Satisfactory quality				
	2. Sufficient quantity				
	3. Good variety				
	4. Generally healthy				
	5. Served on time				
	E. PROGRAM MANAGEMENT TEAM*				
	1. Accommodating the needs of the participants through provision of question and answer				
	2. Efficient				
	3. Courteous				
	4. Responsive to the needs of trainees				
	II. SIGNIFICANT LEARNING What do you consider your most significant learning from the program? * Avoid listing down mere session titles and/or topics _____ How will your learning impact your work as a teacher? * _____ III. COMMENTS AND SUGGESTIONS Do you have any suggestions or comments to improve similar programs? * _____				
Enclosure	Training Matrix and Menu Plan				

Training Matrix

MATHEMATICS IN-SERVICE TRAINING PROGRAM

November 26-29, 2024

TIME	Day 1	Day 2	Day 3	Day 4
7:30-8:00 AM	Arrival & Registration	MOL	MOL	MOL

8:00-9:30 AM	**Opening Program** *Opening Ceremonies *Pre-Test	**Session 3** Collaborative Expertise 1: Sharing of Best Practices in Teaching Mathematics Facilitator/ Speaker: Dr. Minervina A. Dion (SMNHS)	**Session 5** Going the Extra Mile (What it Takes to be a Princess Maha Chakri Awardee) Speaker: Jerwin O. Valencia (Dingras NHS)	**Session 6** Digital Innovation Strategies in Teaching Mathematics: Use of Desmos for Problem Solving Speaker: Efren Cabotage(NNCHS)
9:30-10:00 AM	**MORNING BREAK**			
10:00 AM-12:00 PM	**Session 1** Metacognitive Strategies in Teaching Mathematics Speaker: Dr. Minervina A. Dion (SMNHS)	**Continuation of Session 3** (Collaboration/ Presentation of Best Teaching Practices)	**Continuation of Session 5** Going the Extra Mile (Suggested Innovations and Income Generating Projects in Mathematics)	**Continuation of Session 6** Digital Innovation Strategies in Teaching Mathematics: Use of Desmos for Mathematical Investigation
12:00-1:00 PM	**LUNCH**			
1:00-3:00 PM	**Session 2** Trends and Developments in Mathematical Researches Speaker: Dr. Feljone G. Ragma (EPS-SDO Candon City)	**Session 4** Unpacking Common Least Mastered Competencies in Mathematics Speaker: Dr. Nestor G. Villaflor (EPS-SDO Ilocos Sur)	**Continuation of Session 5** Going the Extra Mile (Community Outreach Programs in Mathematics/ Output Making)	**Continuation of Session 6** Digital Innovation Strategies in Teaching Mathematics (Use of Geogebra)
3:00-3:30 PM	AFTERNOON BREAK			
3:30-5:00 PM	**Continuation of Session 2** **(**Output Making/ Presentation/ Critiquing of Outputs)	**Continuation of Session 4** (Output Making/Presentation and Critiquing of Outputs)	**Continuation of Session 5** (Presentation and Critiquing of Outputs)	Closing Program *Posttest *Evaluation & Feedback *Closing Ceremonies

Menu Plan

MATHEMATICS IN-SERVICE TRAINING PROGRAM

November 26-29, 2024

MEAL	Day 1	Day 2	Day 3	Day 4
AM Snacks	Pancit Lomi Iced Tea	Pancit Bihon Pineapple Juice	Spaghetti Iced Tea	Empanada Bottled Water
LUNCH	Fried Chicken Mixed Vegetable Rice Bottled Water	Pork Sinigang Pinakbet Rice Bottled Water	Mushroom Soup Beef Steak Rice Bottled Water	Fried Fish Vegetable Stew Rice Iced Tea
PM Snacks	Bread Orange Juice	Banana Cue Soft Drinks	Sandwich Bottled Water	Banana Bread Bottled Water

5. Validation of In-Service Training Program

Table 15 presents the level of acceptability of the in-service training program. It could be gleaned from the table that level of acceptability of the training program in very highly acceptable. It was evident on its overall rating of 4.45. This means that the crafted training program can help enhance the teaching competence of mathematics teachers and that it meets the criteria for a training program being conducted in the Department of Education. According to Renko, et. al (2020), high acceptability of the training indicates strong potential for implementation success.

Table 15. Level of Acceptability of the In-Service Training Program

Indicators	Weighted Mean	DR
1. The training design builds on quality training design.	4.60	VHA
2. The objective and contents identified in the training relate to the current needs of education.	4.75	VHA
3. The training design take into consideration the specific need of the teachers.	4.20	HA
4. The training design provides sufficient information in relation to needs of the teacher.	4.00	HA
5. The contents described in the training design are logically and accurately presented.	4.20	HA
6. The training design is technology enabled and cost effective.	4.60	VHA
7. The suggested activities encourage the participants to apply what they have learned from training in their actual work.	4.60	VHA
8. The training design promotes opportunities for collaborative learning in the workplace.	5.00	VHA
9. The training design includes an appropriate time frame adequate to complete expected accomplishments and outputs.	4.40	VHA
Overall Weighted Mean	4.45	VHA

Legend: 4.21-5.0 Very Highly Acceptable (VHA) 3.41 – 4.20 Highly Acceptable (HA)

IV. CONCLUSIONS

Based from the findings, the following conclusions are drawn:

1. Majority of Mathematics teachers in Unit III are young with ten or less years in the service. This new breed of teachers that can easily cope with the demands of 21st century learners, technology-wise. However, with the small number seminars attended over the last three years, teachers lack opportunities for professional enhancement.

2. Mathematics teachers are very highly competent in terms of dedication to teaching, knowledge of the subject matter, classroom organization and management, instructional organization, instructional implementation, and monitoring student progress and potential.

3. The relationship between the profiles of the respondents and the competence level are as follows: age and years of service had significant positive relationship with the level of dedication to teaching, level of knowledge of subject matter, and level of instructional implementation; and, age also has a positive significant relationship to the level of classroom organization and management of the teachers. As an overall result, age and years of service resulted to a positive significant relationship with the teachers' competence level.

4. An in-service training program can be crafted to maintain and uplift the content and pedagogical competence level of the teachers.

5. The in-service training program is very highly acceptable.

V. RECOMMENDATIONS

The following are the recommendations offered based from the findings and conclusions of the investigation.

1. Future researchers may add teaching position as an additional part of the profiles of the respondents to see its significant relationship to the teachers' competence level.

2. Teachers should continue to seek professional development aside from seminars being offered by the Department of Education to enhance professional growth.

3. Further study can be made to a wider scope in order to see the competence level of the teachers and craft a program development plan to enhance their level of competence.

4. It is suggested that the in-service training program will be implemented by the school heads of Unit III in the Schools Division of Ilocos Sur to enhance the content and pedagogical competence of Mathematics Teachers in Unit III.

5. The education department should allocate ample budget for teacher trainings.

6. A parallel study can also be made to Senior High School Mathematics teachers.

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