

Assessment of Continuous Professional Development, Classroom Pedagogical Practices, Episodes in Teaching and Classroom Engagement of the Junior High School Mathematics Teachers among the Countryside Public Schools in the PhilippinesRenato Siso Cagomoc^[1]Erwin Lesbos Purcia^[2]^[1]Chief Education Supervisor^[2]Education Program SupervisorDepartment of Education-Schools Division of Calbayog City
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Abstract. This descriptive-assessment research evaluated the continuous professional development, classroom pedagogical practices, episodes in teaching and classroom engagement of the junior high school Mathematics teachers among the countryside public schools in the Philippines specifically in the Island of Samar – the Philippines's third largest island. Results revealed that majority of the Mathematics teachers undertook several continuous professional development practices and mostly engaged in in-service trainings that are regularly held in their respective schools. Further, school heads and teachers shared similar perspectives on the importance of various classroom pedagogical practices that were used in the successful conduct of various teaching and learning activities. This could be attributed to incorporating various activities in many episodes of teaching and how they engaged students in many kinds of classroom activities. Finally, the personal variables of the respondents affected in some way or another the various classroom pedagogical practices, continuous professional development programs and even their performance in episodes of teaching and classroom engagement.

Keywords: Assessment, Continuous Professional Development, Classroom Pedagogical Practices, Episodes in Teaching and Classroom Engagement

Introduction

Mathematics is a subject that pervades life at any age and in any circumstance. Thus, its value goes beyond the classroom and the school. Like other subject, it is important because it supports and contributes to the purposes of general education for children are sent to school in order that they become useful members of the community and they contribute to the welfare of the society. It is mathematics which aids in the preparation of pupils for efficient participation in the activities which they will engage later as adults and for the assumption of their share of social responsibility (Department of Education K to 12 CG in Mathematics, 2012).

Teacher factor is the most recommended factors affecting students' learning. Teachers are responsible to the kind of learning and experiences the students engage everyday as well as the setting of educational goals and total personality development. Teachers in mathematics subject have high responsibility in molding the mathematics skills of their students. If students regard mathematics as a difficult subject, teachers should provide ways and means in delivering the lesson in the most meaningful and easiest way. Thus, the use of varied methods and pedagogies are at stake, for they provide the learners with varied methodologies to attain their goals and thereby the transfer of learning is ensured (Braza & Supapo, 2014).

The teacher preparation and the Continuing Professional Development (CPD) are very important to fill the gap in knowledge about how the initial and continuing education of teachers affects the practice of teachers. Because of the extreme importance of mathematics

for future progress, the central issue now is whether the process of learning to teach mathematics draws attention to, and emphasizes the kind of teaching known to be important for developing school children's abilities to understand basic mathematical concepts. There must be a comprehensive picture of the initial training and the CPD in relation to mathematics in the early years of schooling, identifying the factors that contribute to the successful practice will lead to increased student learning outcomes, as well as the specific barriers and constraints that impede teacher practice and student progression in basic numeracy (Bunyi et al., 2011).

Khader (2012) found the premise that individual teacher's beliefs are strong indicators of his/her instructional classroom practices. These beliefs can be thought of as guiding principles that teachers hold to be true and that serve as lenses through which new experiences can be understood. When people believe something as true, they perceive the information supporting that belief. What teachers do in the classroom is said to be governed by what they believe, and these beliefs often serve as a filter through which instructional judgments and decisions are made. Research has indicated that teachers possess a vast array of complex beliefs about pedagogical issues. Accepting the nature and role of these beliefs is essential to the understanding of the choices and decision these teachers will make. It has become widely recognized that the teachers' pedagogical beliefs play a central role in their teaching practices where these beliefs are manifested in the teaching methods, in choosing the subjects and activities, decision-making, and evaluation in the classrooms.

Similarly, recent researches have alluded to the growing quest for high quality CPD where mathematics teachers work hard to ensure assured quality learning. This paper is concerned on the continuous professional development of mathematics teachers, as well as on focusing in classroom teaching analysis. In particular, the researcher described and analyzed the teacher's lesson in a classroom and his interaction with his learners. The researcher viewed this lesson through these specific lenses: classroom structure, classroom management, teaching episode, motivation, presentation of the lesson, development of the lesson, generalization, evaluation and assignment. The following pedagogies will focus of the pedagogical practices: experiential learning, process approach, problem-based strategies, inquiry-based learning, math wars approach, cooperative learning, discovery-based instruction and direct instruction.

One of the important goals of Curriculum Implementation Division of the Department of Education specifically in mathematics subject is to increase understanding and appreciation of mathematics as a mode in the expression of 21st century education, but we cannot deny the fact that students showed low performance, high math anxiety, low math self-efficacy and very low results in any mathematics assessment.

In the schools' division of the First and Second Districts of Samar, the record showed a very low performance of students in mathematics as reflected in the National Achievement Test (NAT) for three consecutive School Years from 2012-2015 of the fourth-year students. The result further revealed that the Schools Division of Calbayog City Division got only an average MPS of 62.6 percent, Catbalogan City Division 53.57 percent and Samar Division 72.96 percent which are par below the national standard of 75 percent (DepEd Region8 NAT result, Planning Section).

Furthermore, during the 2016 Metrobank-DepEd Math Challenge, Mathematics Festival of Talents- Math Quiz, Provincial Statistics Quiz and other Mathematics competitions, contestants from the Schools Division of in the First and Second Districts of Samar could hardly get the qualifying score for the regional and national levels. The Schools Division of Samar could hardly be recognized as the Mathematics Wizard in the country and or even in its own region.

It was further noted by the researcher that during his observation of classes and monitoring of schools, that teachers would resort to teaching methodologies that they were comfortable with or those that they have been using for many years in teaching. Meanwhile, new teachers would resort to the use of ICT, but they did not know other pedagogies despite the introduction of new other pedagogies without considering the episodes of teaching and classroom engagement of learners and this resulted in the very low performance in mathematics as reflected in the over-all MPS of the first quarter in Mathematics with only 58.9 percent (DepEd. SGOD-Planning Section).

It is in the scenario cited that the researcher was prompted to conduct the study to assess the continuous professional development of teachers, classroom pedagogical practices, episodes of teaching and classroom engagements of junior high school teachers in the First and Second Districts of Samar.

Research Questions

This study dealt with the assessment of continuous professional development, classroom pedagogical practices, episodes in teaching and classroom engagement of the junior high school mathematics teachers in the First and Second Districts of Samar with the end view of proposing an enrichment program for Junior high school mathematics teachers.

Specifically, it sought to answer the following questions:

1. What is the profile of the junior high school mathematics teachers in the First and Second Districts of Samar in terms of the following;
 - 1.1 age;
 - 1.2 sex;
 - 1.3 civil status
 - 1.4 teaching experience;
 - 1.5 highest educational qualification;
 - 1.6 field of specialization;
 - 1.7 position;
 - 1.8 net take home pay; and
 - 1.9 number of relevant trainings attended?
2. What continuous professional development practices were undertaken by the junior high school mathematics teachers in the First and Second Districts of Samar?
3. What are the classroom pedagogical practices of junior high school mathematics teachers in the First and Second Districts of Samar as perceived by the school heads, and the teachers in terms of the following;
 - 3.1 experiential learning;
 - 3.2 process approach;
 - 3.3 problem based strategies;
 - 3.4 inquiry based learning;
 - 3.5 math wars approach;
 - 3.6 cooperative learning;
 - 3.7 discovery based instruction; and
 - 3.8 direct instruction?
4. Is there a significant difference on the perception of the respondents on the classroom pedagogical practices in terms of the above-mentioned variables?
5. What is the performance in the episodes of teaching and classroom engagement observations of the junior high school mathematics teachers in the First and Second Districts of Samar as rated by the school heads?
6. Is there significant relationship among continuous professional development, classroom pedagogical practices and the episodes of teaching and classroom engagement?

7. Based from the findings of the study, what mathematics intervention/enrichment program can be proposed?

Related Literature

With the increasing public availability of advanced technological platforms, humans are witnessing an efflorescence of commercial products designed for interactive learning of mathematics content. In this brave new world, users manipulate virtual objects to complete the engaging tasks and develop conceptual understanding of target notions, such as arithmetic operations. Although these electronic devices are slow to enter the mainstream education, they are literally at the fingertips of any child who has access to a tablet, smartphone, or any other natural user interface platform, such as Wi/'s, Xbox, Kinect, or Leap Motion. It is understood that this unprecedented outburst in downloadable, over-the counter gadgets is slow to be evaluated, let alone guided by the educational research community (Abrahamson, 2015). It is problematic, that extant theory of learning is by and large a theory of learning with paper, informed neither by the interaction possibilities of emerging technologies nor by what these possibilities could imply for mathematical epistemology and pedagogy (Papert, 2014). In the short term, the scarcity of bold research on interactive mathematics learning impedes the formulation of empirically based progressive policies concerning the integration of technological environments into educational institutions. In the long term, this scarcity is accelerating misalignment between theory of learning and emerging practices to which it should apply. As children are learning to move in new ways, theory of learning should move in new ways, too.

Teachers are the most important resource for developing students' mathematical identities (Cobb & Hodge, 2012). They influence the ways in which students' think of themselves in the classroom (Walshaw, 2007). In establishing equitable arrangements, effective teachers' pay attention to the different needs that result from different home environments, different languages, and different capabilities and perspectives. The positive attitude that develops raises student's comfort level, enlarges their knowledge base, and gives them greater confidence in their capacity to learn and make sense of mathematics. Confident in their own understandings, students will be more willing to consider new ideas presented by the teacher, to consider other student's ideas and assess the validity of other approaches, and to persevere in the face of mathematical challenge.

Building on student's thinking, effective teachers plan mathematics learning experiences that allow students to build on their existing proficiencies, interest, and experiences. In planning for learning, effective teachers put student's current knowledge and interests at the center of their instructional decision making. Informed by on-going assessment of student's competencies, including language, reading and listening skills, ability to cope with complexity, and mathematical reasoning, teachers adjust their instruction to meet the learning needs of their students.

With the emphasis on building student's existing proficiencies rather than remediating weaknesses and filling gaps in student's knowledge, effective teachers are able to be responsive to their students and to the discipline (Carpenter, Fennema, & Franke, 2016). They understand that learners make mistakes for many reasons. Some mistakes happen because students have not taken sufficient time or care; others are the result of consistent, alternative interpretations of mathematical ideas that arise from learner's attempts to create meaning. To help students to learn from their errors, teachers organize discussions—with peers or the whole class—that focus student's attention on the known difficulties. Asking students to share a variety of interpretations or solution strategies enables learners to compare and re-evaluate their ideas.

Teachers who start where students are with their learning are also able to design appropriate levels of challenges for their students. For low-achieving students, teachers find ways to reduce the complexity of tasks without falling back on repetition and busywork and without compromising the mathematical integrity of the activity (Houssart, 2012). In order to increase the task challenge in all classrooms, effective teachers put obstacles in the way of solutions, remove some information, require the use of particular representations, or ask for generalizations (Sullivan, Mousley, & Zevenbergen, 2016).

In spite of the efforts made by the agency and mathematics teachers still learners perceived Mathematics as a difficult subject for them. As stated in the paper of Ganai and Guiab (2014), the general observation among Filipino learners towards Mathematics is very alarming. It is commonly accepted that mathematics is difficult, obscure, and of little interest to certain people and that includes the Filipino students. The study of mathematics carries with a stigma and people who are talented in mathematics are often treated as though they are quite normal. They also stressed that mathematics is an important learning area in school to be learned by the students. It is the prime vehicle for developing student's logical thinking and high order cognitive skills. Moreover, it plays a major role in a number of other scientific fields such as Physics, engineering and statistics. However, based on the achievement test result in both national and international results, Filipino learners performed low in mathematics although Filipino students excel in knowledge acquisition but considerably low in lessons requiring higher order thinking skills which mathematics required from the learners.

School mathematics takes place in a situation with the following considerations: (1) children learn to enjoy mathematics; (2) children learn important mathematics; (3) mathematics is a part of children's life experience which they talk about; (4) children pose and solve meaningful problems; (5) children use abstractions to perceive relationships and structure; (6) children understand the basic structure of mathematics, and (7) teachers expect to engage every child in class (National Council of Educational Research and Training, 2006). Though the study was conducted in the elementary level, but then the considerations framed by the writer are also observed to the higher educational level, such as the high school and the tertiary levels.

A study on online professional development program for grades 5-9 mathematics was conducted by Bautista, Brizuela, Glennie and Caddle (2014) where the study aimed to help teachers enhance their abilities to attend and respond to student thinking. Participants of the study took a series of three online graduate level semester-long courses focused on mathematical content knowledge and student mathematical thinking as professional development programs to be evaluated to these teacher-participants. Based on the findings, the teachers' individual posting on an online forum showed that each of them shifted in a different direction. Moreover, their individual final projects were also different from one another and demonstrated different approaches to responding to student thinking in the context of their classrooms. So, the study concluded that the continuous professional development attended by the mathematics teachers had improved the teaching competence.

On other hand, there were principles associated with the ambitious mathematics teaching as follows: (1) students are sense makers, (2) teachers and students learn together; relationships become a resource for developing mathematical proficiency and identity; (3) ambitious instruction requires clear mathematical learning goals; (4) teachers plan equitable and responsive learning experiences that enable each student to engage in rigorous academic mathematics work; and (5) teachers plan mathematics learning experiences that enable students to build on their existing proficiencies, interests, and experiences (Anthony et. al, 2015). These concerns should be observed by the mathematics teachers in order for them to

effectively deliver quality teaching to their learners as they continuously submit themselves to professional development.

Professional development is defined as related activities developing an individual's skills, knowledge, expertise and other characteristics as a teaching (Caena, 2011). In her literature review, she also mentioned that teachers must learn in ways that develop higher order thinking skills and performance in order for them to help young people learn the more complex and analytical skills they need for the 21st century. Likewise, to develop the sophisticated teaching required for mission, they must be offered more effective professional learning. Additionally, Caena stressed that to improve classroom practice, Content Professional Development (CPD) should therefore be collaborative and extended over time; include time for practice, coaching and follow up; be grounded in students' curriculum and aligned with local policies; be job-embedded and connected to several elements of instruction such as assessment, curriculum.

Continuing professional development (CPD) refers to life-long teacher learning and comprises the full range of educational experiences designed to enrich teachers' professional knowledge, understanding and capabilities throughout their careers (The Teaching Council, 2011). In addition, in Ireland the Teaching Council's Policy on CPD is underpinned by the three pillars of innovation, integration and improvement and the Council's generic principles of good teacher education which are set out on page 10. In addition, the following principles are important such as: (1) CPD is a right and responsibility of all teachers; (2) it is a coherent national framework; (3) it should have access to a national support services; (4) it should be part of school leadership and the role of the principal; (5) it should promote teacher formation; (6) design of CPD should be designed to the settings of teachers' work and to the holistic development of students ; (7) partnership and collaboration with the stakeholders that nurture teachers' engagement in professional development; (8) CPD should be accredited by the Teaching Council; (9) CPD should foster the development of competences to facilitate quality learning and cater for educational priorities.

Levi-Kerren and Patkin (2016) had conducted a study on mathematic teachers' professional development program in Israel. The research findings of the study attested to the contribution of the program to the teachers' development - mainly to those with longer experience in math teaching – in the area of the taught discipline itself, as well as in the didactic-educational area and the personal-emotional area. These findings were anchored in a conceptual framework of a model of the development of the teachers' nature of concern and interest regarding the change. Furthermore, the paper discusses the potential instrumental and conceptual application of the findings in a focused decision-making process pertaining to running the program, and to a research-based accompaniment of the implementation process of professional development programs.

In 2013, *Expanding Pedagogical Horizons: A Case Study of Teacher Professional Development* was conducted Burridge and Carpenter, data collection was done for over three years and they involved in their study the partnership with the non-government organization (NGO) "Evolve" as partner agency in enhancing the professional development of the disadvantaged secondary schools to develop a multifaceted curriculum. The study concluded that the different educational settings of the program exposed teachers to a range of teaching practices. The exposure combined with the collaborative development of curriculum with the Evolve staff broadened the pedagogy used by teachers. It further recommends that the process should be most effective when external providers work directly with teachers and students collaborating in the development and delivery of the curriculum.

Belay (2016) examined the contribution of teachers' Continuous Professional Development (CPD) to the quality of education and its challenging factors related to teachers. As study results pointed out, although teachers' engagement in CPD activities was found to

be very poor, CPD has made significant contribution was made to the improvement in students' achievement, classroom practices and teachers' professional competence. Moreover, the study found significantly high impact on teachers' belief, commitment, competence, cooperativeness, sense of responsibility and motivation in their CPD practice.

Professional development has been studied in the present and served also as one of the major variables which has the same claim with the previous literature. In this era of education, improving teachers' pedagogical and subject matter knowledge was found to be a key for quality education due to this fact that in every world of education, teachers' Continuous Professional Development (CPD) program has received due attention.

The work of Westbrook et al. (2013) had come up with the review of the various literature pertaining to pedagogy, curriculum, teaching practices and teacher education in developing countries and they have posited that pedagogy itself is a contested term, but involves activities that evoke changes in the learner: Another definition given in their review is that pedagogy is 'any conscious activity by one person designed to enhance learning in another. More so, pedagogy is a sustained process whereby somebody acquires new forms or develops existing forms of conduct, knowledge, practice and criteria from somebody or something that deemed to have been appropriate provider and evaluator. Generally, they summed up that pedagogy comprises teachers' ideas, beliefs, attitudes, knowledge and understanding about the curriculum, the teaching and learning process and their students, that impact on their "teaching practices", that is, what teachers actually think, do and say in the classroom.

Moreover, Walshaw and Anthony (2007) in their study pointed out that classroom discourse and scaffolding of student engagement has revealed specific pedagogical skills, knowledge and dispositions that make a difference to all students. These pedagogical factors shape how, and with what effect, mathematics is taught and learned. Student outcomes are contingent upon them, not as single entities, but as interrelated contingencies. Although our review has surveyed the literature on mathematics classroom discourse, it is important to note that classroom discourse will gain positive effect only when there is a strong cohesion between all the various elements of teacher's work. In other words, the facilitation of productive classroom discourse that is a part of a larger medium of the effective teacher's repertoire that allow students to develop the habits of mind to engage with mathematics productively and to make use of appropriate mathematical tools to support understanding.

In the study of Pascual (2014), the impact of mathematics and science instructional practices, curriculum and academic achievement to career choice in laboratory school graduates of University of Rizal System-Morong, the findings revealed that instructional practices engage students to actively participate in their own learning, the teaching practices that enhance the development of complex cognitive skills, processes used by the teachers together with a school curriculum that emphasizes the development of Science and Mathematics, affect the career choice of its graduates who mostly took scientific and professional courses.

Pedagogical skill development is a big challenge for mathematics teachers in secondary level in the district. In spite of being trained they use to face this challenge, which indicates urgent needs of drastic modifications for effective pedagogical outputs through redefining and redesigning the entire teachers training courses. Moreover, the findings in this study revealed that in spite of having long teaching experience they may not have adequate content as well as pedagogical knowledge. In this context, teachers will have to take up the challenges themselves to create a new dimension in teaching mathematics with self-developed methods and innovative devices stressing on the components of the gap between content and students, so that the objectives of introducing mathematics in schools could be fulfilled to compete with the high-tech world (Das, 2015).

Another variable that was assessed in the study was the classroom engagement. Furrer, Skinner, and Pitzer (2014) believed that the quality of students' relationships with teachers and peers is a fundamental substrate for the development of academic engagement and achievement. They further discussed that Student engagement and motivation are precious commodities, valuable not only to teachers but also to students. Students' school lives are more enjoyable when they are engaged in their classes. Engagement provides an energetic resource for coping with the challenges of schoolwork, promoting students' motivational resilience. Long-term, student engagement is a predictor of student learning and achievement, retention and graduation from high school, and entry into and success in college. Engagement is also a protective factor that buffers students from a host of risky behaviors in adolescence, including truancy, gang involvement, delinquency, and risky sexual behavior. All these presented claims were taken from other existing literatures they have reviewed. With these, they synthesized that the motivational model offers teachers a framework for creating solutions for common motivational problems. At the same time, teachers may find that these strategies are challenging to implement in the school systems where they actually work. The stresses that educators enumerated, compounded by the pressures of high-stakes testing, can make it difficult for teacher's own basic needs to be met, thus eroding the social and personal resources they depend on to serve their students. Therefore, all teachers should have such experiences daily to support their own learning and engagement in teaching.

The above cited literatures paved the way for a better understanding of the recent study which simply suggested that even materials that are published in general circulation talks about continuous professional development.

Method

This study dealt with the descriptive-assessment of continuous professional development, classroom pedagogical practices, episodes of teaching and classroom engagement of the Junior high school mathematics teachers in the First and Second Districts of Samar. This was conducted in the Schools Division in the First and Second Districts of Samar where the researchers took advantage of the limited face to face classes that teachers are engaged in hence gave the feasibility of conducting the study interactively. The respondents of this study were the Junior high school teachers and school heads of the three divisions of the First and Second Districts of Samar which are the Schools Division of Calbayog City, Schools Division of Catbalogan City and Schools Division of Samar. For the school heads respondents, Slovin's formula was employed while universal sampling was employed for teachers actual teaching mathematics in junior high school of 85 schools.

Permission to conduct the study was secured from the Schools Division Superintendents of the schools' divisions of Calbayog City, Catbalogan City and Samar. The instrument was administered personally by the researchers to the different public junior high schools in the three schools' divisions. The researchers also explained the manner of answering the questionnaire to the respondents and personally retrieved the questionnaires to avoid delay. As to the episodes of teaching and classroom engagement, the STAR (Situations, Task, Actions & Result) observation checklist was distributed to the school heads and was retrieved after they have conducted observations to junior high school teachers.

In order to treat, analyze, and interpret the data, the researchers used statistical tools of Frequency and percentage distribution were used to describe the socio-demographic profile of the Junior high school mathematics teachers such as age, sex, civil status, years of teaching experience, highest education qualification, major/ field of specialization, position, net take home pay, and relevant trainings attended. This tool was employed to determine the continuous professional development approaches undertaken by the respondents. Further, mean and standard deviation were used to describe the classroom pedagogical practices and

episodes of teaching and classroom engagement observations and their classroom drawn by the Junior high school mathematics teachers. Analysis of Variance (ANOVA) was used to determine the significant differences in the perception of respondents in terms of classroom pedagogical practices and episodes of teaching, and classroom engagement. Pearson r was employed to determine the degree of relationship between the profile of the Junior high school mathematics teachers and to their continuous professional development, classroom pedagogical practices, episodes of teaching and classroom engagement. All statistical significance of the differences and relationships were set to 0.05 level of significance for analysis and interpretation.

Results and Discussion

This section presents the frequency and percentage distribution of the profile of the junior high school mathematics teachers in the First and Second Districts of Samar in terms of age, sex, civil status, years of teaching experience, highest education qualification, major/field of specialization, position, net take home pay, and relevant trainings attended.

Age. It can be seen from Figure 3, that majority are in the age bracket 28 years old and below with a frequency of 94 (40.17 %), followed by the age bracket 29-37 years old with a frequency of 80 (34.19%), then age bracket 38 years old and above with a frequency of 55 (23.50 %). The mean age is 32.54 years old with standard deviation of 8.30 years old. The age profile shows that the respondents mostly are in their young age.

Sex. It can be gleaned from Figure 4, that majority are females (140 or 60.34 %) than males (92 or 39.66%) which would mean that teaching is a female-dominated profession.

Civil Status. It can be seen from Figure 5, that most teachers are married (150 or 64.66 %), followed by single (80 or 34.48 %) and for others (1 or 0.43 %). This means that being married posed more maturity.

Teaching Experience. It can be seen from the Figure 6, that 93% (39.91) percent have 4 years and below teaching experience, then 91 or 39.06 percent have 5 to 11 years teaching experience and 49 (21.03%) have 12 years and above teaching experience.

Educational Qualifications. As shown in Figure 7, for the educational qualification of the teachers' respondents, majority have master's units (116 or 50.22 %), followed bachelor's degree (101 or 43.72 %), then, with master's degree (13 or 5.63 %), and only one with doctoral Units (0.43 %). This revealed that teachers are educationally qualified.

Field of Specialization. It can be seen from Table 2 that majority are Mathematics major with a frequency of 222 (94.87%), followed by other specializations with frequency of 8 (3.42%), then, Science majors with a frequency of 3 (1.28 %), and Field of Specialization shows that most of the respondents are mathematics major which would suggest that there was proper placement of teachers in teaching the subjects, hence they are competent and knowledgeable teachers.

Teaching Position. Figure 8 shows the distribution of the Junior high school mathematics teachers in the First and Second Districts of Samar in terms of Position. Majority are Teacher 1 (142 or 62.17%), followed by Teacher 3 (53 or 23.04%), then Teacher 2 (23 or 10.00%), next are Master Teacher 1 (9 or 3.91%), then, Master Teacher 2 (1 or 0.43%) and lastly with no answer (1 or 0.43%). The results indicate that the teachers, despite having stayed quite long in the profession, still occupy teacher 1 position which could be attributed to the fact that they do not qualify and most of them have not pursued advanced education. They are also reluctant to apply for a higher position with the idea that the school head should be the one to recommend them instead of the teachers submitting themselves for promotion to the next higher position or they knew that they have not met the basic qualification standard for promotion of teachers which is the effect of vertical articulation.

Net Take Home Pay. As presented in Figure 10, in terms of net take home pay, the figure shows that most have P 6,501.00 to P 9,500.00 net take home pay (85 or 38.20 %), followed, with P 9,501.00 to P12,500.00 net take home pay (54 or 24.20%), then, with P3,501.00 to P6,500.00 net take home pay (31 or 13.90 %) , then, with P15,501.00 to 18,500.00 (8.52%) , then, with P12,501.00 to P15,500.00 (16 or 7.17%), next with P18,501.00 to P21,500.00 net take home pay (14 or 6.28 %) and with P21,501.00 and above net take home pay (4 or 1,79 %). The result shows a meager net take home pay of teachers which is insufficient to defray the family's monthly expenses.

Relevant Trainings. In terms of number of relevant trainings (in hours) attended, it can be gleaned from the Figure 11 below, that majority have 35 to 64 hours attended (134 or 73.63 %), then 34 hours and below (29 or 10.44 %) and 65 hours and above (19 or 10.44 %). This result simply indicates, if not of the K to 12 training program, teachers would have very limited number of training, but still as shown by the mean which might be explained by very limited opportunities, they were not chosen by the school head to be sent to trainings, and the absence /limited budget allocation by the Division office and LGU.

Continuous Professional Development Undertaken by the Junior High School Teachers Teaching Mathematics in the First and Second Districts of Samar

As gleaned from the table, in-service training got the highest frequency with 223 or 98.24 percent, followed by LAC Session with 216 or 94.32 percent, next, Monitoring and Evaluation Scheme with frequency of 177 or 81.19 percent, then, coaching with frequency of 172 or 78.90 percent, then mentoring Program with frequency of 169 or 78.97 percent, then graduate and post graduate studies with frequency of 113 or 70.19 percent, then Peer Tutoring with frequency of 75 or 61.48 percent, then Buddy System with frequency of 54 or 45.38 percent, then, Staff Development with frequency of 50 or 43.10 percent, then on line Education with frequency of 29 or 24.37 percent, then Adult Development Program with frequency of 14 or 12.28 percent and the last is Distant learning with frequency of 10 or 8.55 percent. This result simply indicates that DepEd. Schools Division in the First and Second Districts of Samar are optimistic in delivering the Program of Projects of the Department of Education in terms of giving Technical Assistance to teachers, teaching mathematics subject in the First and Second Districts of Samar. On the other hand, CPD with below 75 percent practiced have been given less priority.

Table 1. Frequency and Percentage Distribution of the Continuous Professional Development Practices of the Junior High School Mathematics Teachers in the First and Second Districts of Samar

Practices	Practiced		Not Practiced		TOTAL	
	f	%	f	%	f	%
In-Service Training	223	98.24	4	1.76	227	100
LAC Session	216	94.32	13	5.68	229	100
Monitoring and Evaluation Scheme	177	81.19	41	18.81	218	100
Coaching	172	78.90	46	21.10	218	100
Mentoring Program	169	78.97	45	21.03	214	100
Graduate & Post Graduate Studies	113	70.19	48	29.81	161	100
Peer Tutoring	75	61.48	47	38.52	122	100
Buddy System	54	45.38	65	54.62	119	100
Staff Development	50	43.10	66	56.90	116	100
On line Education	29	24.37	90	75.63	119	100
Adult Development Program	14	12.28	100	87.72	114	100
Distant learning	10	8.55	107	91.45	117	100

Classroom Pedagogical Practices of the Junior High School Teachers Teaching Mathematics as Perceived by the School Heads and Teachers Themselves

The summary result of the mean and standard deviation on the perception of the respondents on the classroom pedagogical practices of junior high school mathematics teachers in the First and Second Districts of Samar should that the respondents “often practiced” the necessary classroom pedagogical practices in Mathematics. As gleaned from the table, the school heads over-all response indicated a mean of 4.01 with sd 0.64; while the teachers perception indicated a mean of 4.24 with sd 0.68. The over-all result indicated a mean of 4.12 described as “often practiced” with sd 0.66. This would imply that teachers and school heads were unified in their understanding that construction of knowledge is crucial among learners and that all the other classroom pedagogical practices should be enhanced to improve learners’ development.

Table 2. Summary Table on Mean and Standard Deviation on the Perception of the Respondents on the Classroom Pedagogical Practices of Junior High School Mathematics Teachers in the First and Second Districts of Samar

Practices	School Heads			Teachers			Grand Total		
	\bar{x}	desc	sd	\bar{x}	Desc	sd	\bar{x}	desc	sd
Experiential Learning	4.07	OP	0.67	4.33	OP	0.70	4.20	OP	0.69
Process Approach	4.00	OP	0.66	4.15	OP	0.73	4.07	OP	0.70
Problem Based Strategies	4.02	OP	0.72	4.30	OP	0.75	4.16	OP	0.73
Inquiry Based Learning	3.95	OP	0.75	4.25	OP	0.77	4.10	OP	0.76
Math Wars Approach	4.05	OP	0.74	4.34	OP	0.73	4.20	OP	0.73
Cooperative Learning	3.94	OP	0.71	4.17	OP	0.75	4.06	OP	0.73
Discovery Approach	4.02	OP	0.66	4.14	OP	0.67	4.08	OP	0.66
Direct Instruction	4.00	OP	0.66	4.22	OP	0.75	4.11	OP	0.71
Over-all	4.01	OP	0.64	4.24	OP	0.68	4.12	OP	0.66

Legend: 3.51 – 4.50=Often Practiced (OP)

Difference in the Perception of the Respondents on Variables of Classroom Pedagogical Practices

The table presents the test of significant difference on the perception of the respondents on the classroom pedagogical practices of junior high school mathematics teachers in the First and Second Districts of Samar. This indicated that there was significant difference in the perception of the school heads and teachers on variables except discovery approach in the classroom pedagogical practices of junior high school mathematics teachers in the First and Second Districts of Samar in terms of practices on experiential learning, process approach, problem-based strategies, inquiry based learning, math wars approach, cooperative learning and direct instruction. Thus, the null hypothesis on these variables stating that there is no significant difference on the perception of the respondents on the classroom pedagogical practices of junior high school mathematics teachers in the First and Second Districts of Samar was rejected. This would mean that administrators and teachers differ in terms of their understanding on the construction of knowledge as an integral part and crucial among learners with other factors such as the teachers, the pedagogy used and assessment tools contributory to an effective teaching-learning process. Respondents had a wide-range of repertoire of different teaching and learning practices and know how to create the right conditions for learning. However for discovery approach, the null hypothesis stating that there is no significant difference between the selected profile of the respondents with their

classroom pedagogical practices failed to be rejected. This means that teachers have similar interpretations in carrying out lessons using the discovery approach.

Table 3. Test of Significant Difference on the Perception of the Respondents on the Classroom Pedagogical Practices of Junior Highschool Mathematics Teachers in the First and Second Districts of Samar

Aspects	t-value	df	p-value
Experiential Learning	-3.95**	465	0.000
Process Approach	-2.24*	465	0.026
Problem Based Strategies	-4.21**	465	0.000
Inquiry Based Learning	-4.27**	465	0.000
Math Wars Approach	-4.24**	465	0.000
Cooperative Learning	-3.37**	465	0.001
Discovery Approach	-1.87ns	465	0.062
Direct Instruction	-3.32**	465	0.001
Over-all Practices	-3.74**	465	0.000

Legend: ** – Highly Significant at 0.05 level; * – Significant at 0.05 level; ns – Not Significant

Performance on the Episodes in Teaching and Classroom Engagement of the Junior High School Mathematics Teachers in the First and Second Districts of Samar as Rated by the School Heads

The table presents the performance on the episodes of teaching and classroom engagement observations of the junior high school mathematics teachers in the First and Second Districts of Samar.

Table 4. Frequency and Percentage Distribution of the Performance on the Episodes of Teaching and Classroom Engagement Observations of the Junior High School Mathematics Teachers in the First and Second Districts of Samar

Performance	f	%
Outstanding-100%	57	24.36
Very Satisfactory - 90%	160	68.38
Satisfactory- 80%	17	7.26
Total	234	100.00

As gleaned from the table, the average result of the school heads and teachers and their combined result were interpreted to be “very satisfactory”. This means that teachers teaching mathematics were properly guided on the episodes of teaching and classroom engagement.

Relationship among Continuous Professional Development Practices, Pedagogical Practices and Episodes of Teaching and Classroom Engagement of Junior High School Mathematics teachers in the First and Second Districts of Samar

The table shows the significant relationship of the continuous professional development practices, classroom pedagogical practices and the episodes of teaching and classroom engagement of junior high school mathematics teachers in the First and Second Districts of Samar. It can be gleaned that there was no significant relationship in all parameters of the continuous professional development practices to the classroom pedagogical practices of the respondents. Hence, the null hypothesis stating there is no significant relationship between the continuous professional development practices of the respondents with their classroom

pedagogical practices failed to be rejected. This means that LAC session, in service training, Staff Development, mentoring program, coaching, monitoring and evaluation scheme, graduate and post graduate studies, peer tutoring, buddy system, online education, distant learning and adult development program did not affect in one way or the other to their classroom pedagogical practices.

Table 5. Test of Significant Relationship on the Continuous Professional Development Practices and Classroom Pedagogical Practices and Episodes of Teaching and Classroom Engagement of Junior High School Mathematics Teachers in the First and Second Districts of Samar

Continuous Professional Dev't Practices	Classroom Pedagogical Practices			Episodes of Teaching and Classroom engagement		
	Eta	p-value	Desc	Eta	p-value	Desc
LAC Session	0.85ns	0.07	H	0.44*	0.03	MR
In Service Training	0.93ns	0.18	VH	0.26ns	0.07	L
Staff Development	0.93ns	0.21	VH	0.43ns	0.10	MR
Mentoring Program	0.92ns	0.23	VH	0.30*	0.02	L
Coaching	0.91ns	0.22	VH	0.30*	0.05	L
Monitoring and Evaluation Scheme	0.92ns	0.24	VH	0.22ns	0.07	L
Graduate and Post Graduate Studies	0.92ns	0.28	VH	0.30ns	0.11	N
Peer Tutoring	0.95ns	0.20	VH	0.44*	0.05	MR
Buddy System	0.94ns	0.20	VH	0.44ns	0.06	MR
On line Education	0.94ns	0.22	VH	0.53ns	0.10	MR
Distant Learning	0.91ns	0.14	VH	0.62ns	0.12	N
Adult Development Program	0.94ns	0.14	VH	0.38ns	0.09	N

Legend: $\pm 0.91 - \pm 0.99$ – (VH) Very High Relationship; $\pm 0.71 - \pm 0.90$ – (H) High Relationship; $\pm 0.41 - \pm 0.70$ – (MR) Marked/Moderate Relationship; $\pm 0.21 - \pm 0.40$ – (L) Low Relationship; $0.00 - \pm 0.20$ – (N) Negligible Relationship

Meanwhile, the table above shows the significant relationship of the continuous professional development practices to the episodes of teaching and classroom engagement of junior high school mathematics teachers. It can be gleaned that there was no significant relationship between the continuous professional development practices in terms of in service training, staff development, monitoring and evaluation scheme, graduate and postgraduate studies, buddy system, online education, distant learning and adult development program to the episodes of teaching and classroom engagement of junior high school mathematics teachers. Hence, the null hypothesis stating that there is no significant relationship between the continuous professional development practices of the respondents with their episodes of teaching and classroom engagement failed to be rejected. This means that in service training, staff development, monitoring and evaluation scheme, graduate and post graduate studies, buddy system, online education, distant learning and adult development program did not affect in one way or the other to their episodes of teaching and classroom engagement.

While the relationship between the continuous professional development practices in terms of LAC session, mentoring program, coaching and peer tutoring to the episodes of teaching and classroom engagement, the null hypothesis stating there is no significant relationship between the continuous professional development practices of the respondents with their episodes of teaching and classroom engagement was rejected. This means that LAC session, mentoring program, coaching and peer tutoring were associated to their episodes of teaching and classroom engagement.

The table below shows the significant relationship between classroom pedagogical practices and episodes of teaching and classroom engagement of junior high school mathematics teachers in the First and Second Districts of Samar. It can be gleaned from the table that there is no significant relationship between the classroom pedagogical practices to the episodes of teaching and classroom engagement of Junior high school mathematics teachers. Hence, the null hypothesis stating that there is no significant relationship between the classroom pedagogical practices of the respondents with their episodes of teaching and classroom engagement failed to be rejected. This means that the former variable does not affect the episodes of teaching and classroom engagement of junior high school mathematics teachers. This can be attributed to the fact that there are no best pedagogical strategies that can be utilized by teachers. These strategies only become effective depending on the kinds of learners and their absorptive abilities. Teachers, therefore, are challenged to incorporate diversified learning methodologies so performance in episodes of teaching and classroom engagement could be further improved.

Table 6. Test of Significant Relationship on the Classroom Pedagogical Practices and Episodes of Teaching and Classroom Engagement of Junior High School Mathematics Teachers in the First and Second Districts of Samar

Variables	r	Description	p-value
Classroom Pedagogical Practices and Episodes of Teaching and Classroom engagement	0.102 ns	N	0.199

Note: ns – not significant at 0.05 level ($p > 0.05$)

Conclusions

In light of the findings of this study, the following conclusions were formulated:

1. Majority of the Mathematics teachers in the schools' divisions in the First and Second Districts of Samar were at the peak of building their careers and responsible enough in spite of the fact that most of them are new in the profession, have few trainings attended and receive meager net take home pay.
2. Mathematics teachers undertook several continuous professional development practices and mostly engaged in-service trainings that are regularly held in their respective schools.
3. Mathematics teachers engaged their students to experiential learning activities where students had first-hand experiences of various skills necessarily acquired based on established competencies achieved.
4. School heads and teachers shared similar perspectives on the importance of various classroom pedagogical practices that were used in the successful conduct of various teaching and learning activities.
5. Mathematics teachers performed well in carrying out their lessons. This could be attributed to incorporating various activities in many episodes of teaching and how they engaged students in many kinds of classroom activities.
6. Personal variables of the respondents affected in some way or another the various classroom pedagogical practices, continuous professional development programs and even their performance in episodes of teaching and classroom engagement. The younger the teacher, the more aggressive he/she towards the teaching profession and the more flexible he/she became through incorporating various pedagogical strategies that were suited and that measured students' diversified potentials integrating the 21st century skills making them the best of what they could be. Further, despite the meagerness and the fact that teachers in the country are less paid, mathematics teachers still showed up the fire of passion and commitment towards their chosen profession. The conduct of many classroom pedagogical

practices as they embraced the DepEd system and all continuous professional development programs encapsulated their love towards teaching amidst technical inconsistencies.

7. Only the continuous professional development programs bore relevance to teachers' episodes of teaching and classroom engagement performance. This was rooted to the fact that what teachers do inside his/her classroom can simply be attributed to the activities he/she engages to further his/her skills towards teaching and shares these skills to his/her students. His/her responsibility centered in transforming students' hearts and minds and in turn helped them become responsible citizens of the country and the world at large.

Recommendations

Based from the conclusions formulated it is recommended that Mathematics Junior High School teachers should apply techniques relative to the nature of learners they have, the best ways to teach, and how students should learn. It is critical that educators understand and address the student's issues. Mathematics teachers should address varied students' academic needs to achieve higher performances. Teachers teaching mathematics should effectively educate all students. They should give students much time and attention, knowing their strengths and weaknesses inside the classroom. Further, teachers should be re-oriented on the scheme of evaluating their performances using the STAR Approach. Familiarization of items in this guide would help them be abreast with new trends in teaching pedagogy to uplift their students' academic competence. Teachers, should incorporate diversified learning methodologies so performance in episodes of teaching and classroom engagement could be further improved. In fact, school heads in Junior High Schools in the First and Second Districts of Samar should provide guidance among their teachers considering that each one of them are marked with diverse backgrounds and abilities. They should guide their teachers especially the newly-hired ones on how to apply the pedagogies in teaching mathematics inside their classrooms.

Further, the Department of Education should provide opportunities to all mathematics teachers to attend various trainings and conferences. These trainings would help teachers improve their pedagogical skills. Future researchers should conduct similar study to validate and improve the findings of this present probe. This research should enlighten the Department of Education (DepED) about the programs, designs and plans they are enforcing in all of the secondary schools across the country. Finally, an enrichment program should be proposed in order to help the mathematics teachers improve their students' academic performance.

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