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MATHEMATICS TEACHER'S ENGAGEMENT AND STUDENTS' MOTIVATION TO LEARN MATHEMATICS

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ABSTRACT

Effective teachers are those who are highly engaged and who have an essential role in promoting student motivation and achievement. Thus, this study was conducted to ascertain the engagement of Mathematics teachers and its relation to the learning motivation of students in a state college in the Philippines. It employed the mixed methods, specifically Creswell's (2014) sequential explanatory approach, with the survey-questionnaire, interview, and focus group discussion as data collection techniques. The findings of the study revealed that teacher's engagement in Mathematics in terms of "Body Language and Behaviors," "Consistent Focus," and "Individual Attention," were "Very High" while "Rigorous Thinking," "Meaningfulness of Work," "Verbal Participation," "Clarity of Teaching," "Performance Orientation," "Interest and Enthusiasm," and "Confidence," were only "High." Meanwhile, students' motivation to learn Mathematics as to "Relevance," "Interest," "Satisfaction," and "Confidence" were also "High". The test of hypothesis on significant correlation showed that there was a close association between teacher's engagement in Mathematics and students' motivation to learn Mathematics. There was also a corroboration between the quantitative data obtained from the survey and the qualitative data acquired during the interview and focus group discussion. The result further implied that teacher's high engagement contributes positively to students' willingness to learn essential concepts and skills in Mathematics.

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1. INTRODUCTION

Several researchers have affirmed the importance of people who are engaged at work (Harter et al., 2020; Krueger & Killham, 2005; Wagner & Harter, 2006) and the effectiveness of talented teachers to meaningful school outcomes, specifically student achievement (Long & Hoy, 2006; Sanders & Rivers, 1996).

Gordon and Crabtree (2006) proclaimed a need to ensure that teachers work in an environment that promotes his or her engagement to tap students' potentials fully. Teacher engagement refers to the individual teacher's involvement in and enthusiasm for teaching students in schools and reflects how well teachers are known and how often they get to do

what they do best. Gordon and Crabtree (2006) also expressed the importance of valuing teacher talent and engagement more so than any other factor that leads to student success. He emphasized, "Identifying and leveraging the underutilized talent of students and teachers... should be the first consideration in improving outcomes for students". Yet, researchers still see instructional methods and attitudes today that parallel what teachers provided to their students' grandparents (Gardner, 2000).

Deal and Peterson (2002) noted that too many reform efforts focus on steering improvement from the outside through mandates and policies, and too few look at changing schools from within. Improving the working environment and increasing the potential for teacher engagement requires leaders to investigate from the unfamiliar territory: from the inside out (Gordon & Crabtree, 2006). Coffman and Gonzalez-Molina (2002) concluded that great organizations look inward to move forward. The same conclusion may be appropriate for public schools and for individual school district campuses.

Teacher engagement is related to teachers' commitment and investment in student learning. It can be manifested through various classroom behaviors, including lesson plan development, the employment of specific teaching strategies, and student evaluations (Louis & Smith, 1992). Marks (2000) found that teachers' engagement "centered on the work they do with students in classrooms, or as more than one participant described it, 'the teaching part of teaching' (that was) essential to their professional motivation." In turn, teachers who were not focused on their work may not have had opportunities to engage with other professionals, or they may lack support from administrators in their school or school system (Kirkpatrick, 2007). The operational definition of engagement used in this study is the "interest in, enthusiasm for and investment in teaching; centered on the work (teachers) do with students in classrooms" (Kirkpatrick, 2007).

The role of effective teachers is fundamental in promoting student motivation and achievement. Effective teachers are described as possessing those dispositions that are recurring patterns of thoughts, feelings, or behaviors that result in higher levels of performance as a teacher (Hutajulu, Wijaya, & Hidayat, 2019; McCune & Entwistle, 2011). Accomplished teachers exhibit an awareness of and attention to content and students, affecting classroom achievement (Long & Hoy, 2006). Sanders and Rivers (1996) agreed that teachers were potent influence affecting academic achievement. The effects teachers have on student achievement were both cumulative and additive. Darling-Hammond and Snyder (2000) reported that teacher engagement explained 40 to 60% of the total variance in student gains in mathematics and reading.

Because of the expectations of preparing students for the 21st century, the attention required of educators to master state-mandated high-stakes testing and federal No Child Left Behind (NCLB) accountability, and studies pointing to a need for effective teachers to affect student learning, local school districts are challenged with the task of selecting "competent, caring, and qualified teachers... who can help all students learn" (National Council for Accreditation of Teacher Education, 2002) and can have a "positive impact on student learning" (National Council for Accreditation of Teacher Education, 2002).

Theoretical frameworks like self-determination and flow theories point to causal links between teacher engagement and actions, and student engagement and actions. For example, Klem and Connell (2004) have examined the use of selected educational variables and psychological requisites necessary to facilitate effective engagement. Connell's model of motivation (Skinner & Belmont, 1993; Klem & Connell, 2004) described how the behaviors of the teacher influenced student engagement.

Combinations of carefully employed educational variables have been successful in increasing student engagement. These variables include quality teacher and student interaction (Kelly, 2007), high levels of student efficacy (Linnenbrink & Pintrich, 2003),

appropriate instructional methods (Johnson, 2008), higher teacher expectations (Tyler & Boelter, 2008), and establishing a supportive and caring classroom community (Walker & Greene, 2009). The study's findings conducted by Shernoff et al. (2014) indicate that challenging tasks produce positive emotions, thereby creating the best opportunity for engagement. Effective classrooms reflect academically intense lessons charged with relevant activities, fostering feelings of student control in their learning environment and building self-confidence in their academic ability. In these classrooms, students concentrate, experience enjoyment, and secure immediate intrinsic satisfaction, which creates a foundation of future interests (Shernoff et al., 2014).

Introducing the factors affecting academic achievement determines the quality of the education system (Alnabhan et al., 2001). Motivation is an essential factor in this sense. It means that motivation is accepted as a critical element of students' academic achievements (Freedman, 1997). Motivation is taken as a tool that affects the creativity of students' learning styles and academic achievements (Kuyper, van der Werf & Lubbers, 2000). As a result, it is possible to argue that if motivation is ignored, teaching will be ineffective. Because motivation is so important in elementary school, Cavallo, Miller, and Saunders (2002) stated that teachers must plan lessons with engaging activities to capture the students' attention. Like other disciplines, motivation has a significant effect on mathematics lessons. Moreover, since motivation guides students, it can help them predict procedure and result of activities.

The willingness, need, desire, and compulsion of a student to participate in and succeed in the learning process is motivation (Bomia et al., 1997). Middleton and Spanias (1999) viewed it as reasons individuals have for behaving in a given situation. Ames (1992) stated that motivation exists as part of one's goal structures, one's beliefs about what is essential. According to Skinner and Belmont (1993), motivated students "select tasks at the edge of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they generally exhibit positive emotions during ongoing action, such as enthusiasm, optimism, curiosity, and interest". Mathematics success has a powerful influence on motivation to achieve (Middleton & Spanias, 1999). Also indicated by Dickinson and Butt (1989), students will find a task more enjoyable when they have a moderately high probability of success than one with a lower chance of success.

Motivation is defined as "the reasons underlying behavior" (Guay et al., 2010). Paraphrasing Broussard and Garrison (2004) defined motivation as "the attribute that moves us to do or not to do something." Motivation also entails a web of interconnected beliefs, perceptions, values, interests, and behaviors. As a result, various motivational approaches can concentrate on cognitive behaviors, non-cognitive aspects, or both. Academic motivation, for example, was defined by Gottfried (1985) as "enjoyment of school learning characterized by a mastery orientation; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks." Meanwhile, Turner (1995) defined motivation as "voluntary uses of high-level self-regulated learning strategies, such as paying attention, connection, planning, and monitoring."

The students' motivation to learning mathematics concept was employed to determine students' motivation level towards mathematics based on four dimensions, namely interest, relevance, confidence, and satisfaction (Burden, 2000; Seifeddine, 2014). Interest is the first dimension of motivation which refers to whether students' curiosity is aroused and whether that passion is maintained over time. This area depends a great deal on whether the learner's curiosity has been engaged. According to motivational studies, people tend to be more interested in 1) things they already know something about or believe in, although the unexpected and unfamiliar can be intriguing within reason, 2) real people and events

involving humanity as opposed to abstract or hypothetical events, 3) anecdotes and other devices in which a personal, emotional element is injected into an otherwise purely intellectual or procedural material.

Relevance refers to the learner's perception of whether instruction meets personal needs or goals. It relies upon three motives: achievement, affiliation, and power. Achievement refers to the desire to overcome obstacles, accomplish goals and tasks, and to succeed at things. Affiliation is the desire to have close personal relationships with other people that are two-way while power is the ability to influence people. The term "relevance" in education refers to learning experiences that are either directly applicable to students' personal aspirations, interests, or cultural experiences (personal relevance) or are linked to real-world issues, problems, and contexts (real-world relevance) (life relevance).

Confidence is something that is related to the probability of success that the learner feels and how much control the learner has over that success. Expectations of oneself are more self-directed and include locus of control, personal causation, and learned helplessness. Locus of control is either internally oriented, whereby the person believes that individual effort brings about advantages, or externally oriented, where the person feels that consequences are not under their control. Personal causation is the idea that a unique attempt will lead to positive results. Learned helplessness develops when an individual who wants to and is expected to succeed finds success impossible. Learned helplessness negatively correlates to effort in that as effort lags, learned helplessness generally would increase.

Satisfaction can come from a sense of accomplishment, praise from superiors, or simply entertainment. Feedback and reinforcement are essential elements, and when learners appreciate the results, they will be motivated to learn. It also refers to intrinsic motivations and reactions to extrinsic rewards. Student satisfaction is defined by Wiers-Jenssen, Stensaker, and Grogaard (2002) as students' evaluations of the services provided by universities and colleges. Due to repeated interactions in the higher education environment, student satisfaction is a constantly changing construct (Elliott and Shin, 2002). Because an institution listens to its students, it is a dynamic process that necessitates clear and effective action. Student satisfaction is a complex construct influenced by a variety of student and institution characteristics (Thomas & Galambos, 2004). Student satisfaction refers to a student's overall reaction to his or her learning experience (Wiers-Jenssen et al., 2002).

Given the preceding situation, this study ascertained the association between the engagement of a mathematics teacher and the learning motivation of high school students in the sole state college of Zamboanga del Sur, Philippines. Specifically, it determined the teacher's engagement in mathematics, the students' motivation to learn mathematics, as well as the significance of the correlation between teacher's engagement and students' motivation to learn mathematics.

2. METHOD

This study utilized the mixed methods of research, particularly Creswell's sequential explanatory approach, in gathering and analyzing the data on teacher's engagement and students' motivation to learn mathematics. Creswell (2014) stated that sequential explanatory approach is described by the collection and analysis of qualitative data in order to help explain the findings of the quantitative study. In this study, the quantitative-correlational method was firstly used and then supported by the qualitative data which were obtained through the interview and focus group discussion (FGD).

A total of 41 Grade 7 students and their mathematics teacher from the high school department of a state college in a Philippine province were involved as participants who

were determined using the purposive sampling method. Before they were included, the participants were required to accomplish a written informed consent form (ICF) to make their involvement/participation in the study proper and ethical.

Standard questionnaires were distributed by the researchers to the participants to gather relevant information about teacher's engagement and students' motivation to learn mathematics. The Teacher Engagement Measurement Tool by Jones (2008) was used to ascertain teacher's engagement in terms of body language and behaviors, consistent focus, verbal participation, confidence, interest and enthusiasm, individual attention, clarity of teaching, meaningfulness of work, rigorous thinking, and performance orientation. The students' motivation to learn mathematics concept was employed to determine students' motivation level toward mathematics as to interest, relevance, confidence, and satisfaction (Burden, 2000; Seifeddine, 2014). Both these questionnaires used the four-point hypothetical mean range from very high, high, low, and very low. Guide questions, meanwhile, were used by the researchers during the teacher's personal interview and students' focus group discussion. Before using them in the interview and group discussion, the guide questions were scrutinized and underwent pilot testing to avoid validity and reliability problems. Both interview and focus group discussion were recorded and transcribed using conventions.

Both the descriptive (frequency counts and percentage) as well as inferential statistics (Pearson Product Moment Correlation Coefficient) were used by the researchers in analyzing the quantitative data. On the other hand, content analysis was employed in order to reveal the dominant themes present in the qualitative data. Furthermore, anonymity, objectivity, and accuracy were the ethical issues ultimately considered by the researchers.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Level of teacher's engagement in mathematics

Table 1 shows the data which reflect teacher's level of engagement in mathematics. Based on the Table 1 presented, "Body Language and Behaviors" ranks first as it obtained the highest weighted mean of 3.47; followed by "Consistent Focus," 3.33; and "Individual Attention," 3.31. These indicators yield varied weighted mean but all receive the same verbal interpretation of "Very High." Analysis of the findings reveals that teacher's engagement in mathematics teaching is "High" as strongly supported by the overall weighted mean of 3.23. The findings imply that the teacher highly demonstrates her enthusiasm in teaching the students to learn mathematics and her willingness to provide and be involved in different classroom activities in order to promote student learning.

Table 1. Level of teacher's engagement in mathematics

Items	Weighted Mean	Interpretation
1. Body Language and Behavior	3.47	Very High
2. Consistent Focus	3.33	Very High
3. Verbal Participation	3.21	High
4. Confidence	3.09	High
5. Interest and Enthusiasm	3.12	Very High
6. Individual Attention	3.31	High

Items	Weighted Mean	Interpretation
7. Clarity of Teaching	3.17	High
8. Meaningfulness of Work	3.22	High
9. Rigorous Thinking	3.24	High
10. Performance Orientation	3.14	High
Over-all Weighted Mean	3.23	High

3.1.2. Level of students' motivation to learn mathematics

3.1.2.1. Level of students' motivation to learn mathematics in terms of interest

Table 2 displays the data that reveal students' motivation to learn mathematics in terms of interest. Among the statements, statement 1, "I love learning mathematics" yields the highest weighted mean which is pegged at 3.10; closely followed by statement 4, "I am highly motivated to learn mathematics" 3.05; statement 3, "The hours I spend doing mathematics are the ones I enjoy most" 2.92; and statement 2, "Learning mathematics is not frustrating" which earns the lowest weighted mean of 2.61. Although the given statements have obtained varied weighted mean, they all receive the same verbal interpretation of "High." Analysis of the results entails that students' interest to learn mathematics is "High" as strongly evidenced by the overall weighted mean of 2.92. The results further imply that students highly demonstrate their curiosity to learn, respond, and attend to the subject matter taught by their teacher in their mathematics subject.

Table 2. Level of students' motivation to learn mathematics in terms of interest

Items	Weighted Mean	Interpretation
1. I love learning mathematics.	3.10	High
2. Learning mathematics is not frustrating.	2.61	High
3. The hours I spend doing mathematics are the ones I enjoy most.	2.92	High
4. I am highly motivated to learn mathematics.	3.05	High
Over-all Weighted Mean	2.92	High

3.1.2.2. Level of students' motivation to learn mathematics in terms of relevance

Table 3 shows the data which reflect students' motivation to learn mathematics in terms of relevance. Among the statements, statement 5, "Mathematics is relevant to my needs and goals both in school and at home," ranks first as it has garnered the highest weighted mean of 3.26; followed by statement 4, "Mathematics subject matter is related to my daily experiences" 3.18; and statements 6, "Mathematics gives me opportunities for choice, responsibility and interpersonal influence" and 7, "Mathematics lessons give me opportunities for cooperative social interaction" which earned the same weighted mean of 3.13. Other statements yield varied weighted mean but have been interpreted as "High." Analysis of the findings reveals that students' perception about the relevance of the mathematics subject is "High" as confirmed by the overall weighted mean of 2.96. The

findings also elucidate that students highly perceive the subject matter content in mathematics as very significant to them.

Table 3. Level of students' motivation to learn mathematics in terms of relevance

Items	Weighted Mean	Interpretation
1. I aspire to study mathematics in college after graduating high school.	2.87	High
2. I am not sure whether there is a need for me to continue studying mathematics.	2.69	High
3. I find activities in mathematics lessons meaningful.	3.11	High
4. Mathematics subject matter is related to my daily experiences.	3.18	High
5. Mathematics is relevant to my needs and goals both in school and at home.	3.26	High
6. Mathematics gives me opportunities for choice, responsibility, and interpersonal influence.	3.13	High
7. Mathematics lessons give me opportunities for cooperative social interaction.	3.13	High
8. I would like a career that does not require mathematics.	2.32	Low
Over-all Weighted Mean	2.96	High

3.1.2.3.Level of students' motivation to learn mathematics in terms of confidence

Table 4 displays the data which show students' motivation level to learn mathematics in terms of confidence. Among the given statements, statement 4, "Learning mathematics gives me opportunities for personal advancement," ranks first as it has obtained the highest weighted mean of 3.33 which is interpreted as "Very High." Meanwhile, statement 9, "I expect to get high scores in mathematics tests," follows next as it has yielded the weighted mean of 3.05; statements 6, "I rarely expect to perform well in mathematics-related subjects" and 7, "I expect to be able to solve mathematical problems anywhere I come across them if they are of my level of education" which both earned the same weighted mean of 2.87, interpreted as "High." Other statements have earned varied weighted mean but are all interpreted as "High." Analysis of the findings discloses that students' confidence to learn mathematics is "High" as strongly supported by the overall weighted mean of 2.67. The findings further reveal that students highly manifest their locus of control, personal causation, and learned helplessness in the different tasks and activities they always do when learning mathematics.

Table 4. Level of students' motivation to learn mathematics in terms of confidence

	Items	Weighted Mean	Interpretation
1.	I find it hard to work independently on mathematical problems.	2.23	Low
2.	I rarely expect to be able to apply mathematics in life situations.	2.08	Low
3.	I rarely expect to be successful in mathematical tasks given by teachers in mathematics classrooms.	1.95	Low
4.	Learning mathematics gives me opportunities for personal advancement.	3.33	Very High
5.	I practice solving mathematical problems on my own during holidays.	2.72	High
6.	I rarely expect to perform well in mathematics-related subjects.	2.87	High
7.	I expect to solve mathematical problems anywhere I come across them if they are of my level of education.	2.87	High
8.	I can work independently in mathematics exercises in and outside mathematics classrooms.	2.76	High
9.	I expect to get high scores on mathematics athematics tests.	3.05	High
10.	I expect to be able to apply mathematics easily to other situations in life.	2.82	High
Over-all Weighted Mean		2.67	High

3.1.2.4.Level of students' motivation to learn mathematics in terms of satisfaction

Table 5 presents the data that reflects students' motivation to learn mathematics in terms of satisfaction. Of the given statements, statement 1, "Learning mathematics is in itself rewarding," ranks first as it has garnered the highest weighted mean of 3.05; closely followed by statement 5, "I am satisfied with the way mathematics is taught in mathematics classrooms" 3.03; and statement 6, "I am satisfied with my performance in mathematics assignments, tests, and examinations" 3.00, which have received the same corresponding verbal interpretation of "High." Other statements have received varied weighted mean but are also interpreted as "High." Analysis of the results denotes that students' satisfaction to learn mathematics is "High" as strongly evidenced by the overall weighted mean of 2.81.

Furthermore, the results reveal that the students are often motivated to perform their assigned tasks when they know they are appreciated by their teacher and are given or reinforced by certain rewards or recognition for a job or an output well done.

Table 5. Level of students' motivation to learn mathematics in terms of satisfaction

Items	Weighted Mean	Interpretation
1. Learning mathematics is in itself rewarding.	3.05	High
2. I am satisfied with the way I learn mathematics.	2.97	High
3. I feel uneasy during mathematics lessons.	2.27	Low
4. I am dissatisfied with my participation in classroom mathematical activities.	2.53	High
5. I am satisfied with the way mathematics is taught in mathematics classrooms.	3.03	High
6. I am satisfied with my performance in mathematics assignments, tests, and examinations.	3.00	High
Over-all Weighted Mean	2.81	High

3.1.3. Summary data on students' motivation to learn mathematics

Table 6 displays the summary data on students' motivation to learn mathematics in terms of interest, relevance, confidence, and satisfaction. It can be gleaned that relevance ranks first as it has yielded the highest over-all weighted mean of 2.96; closely followed by interest, 2.92; satisfaction, 2.81; and confidence with the lowest over-all weighted mean of 2.67. It can also be noticed that the said indicators only vary on their overall weighted mean but they all received the same verbal interpretation of "High." Analysis of the findings elucidates students' motivation to learn mathematics as to the following indicators is "High" as strongly supported by the overall average weighted mean of 2.84. The findings further imply that students love to learn mathematics because they consider the subject not only fun and interesting but also an essential part of their lives which helps them grow personally, become highly confident, and be successful in their personal and professional lives.

Table 6. Summary of data on students' motivation to learn mathematics

Items	Weighted Mean	Interpretation
1. Interest	2.92	High
2. Relevance	2.96	High
3. Confidence	2.67	High
4. Satisfaction	2.81	High
Over-all Weighted Mean	2.84	High

3.1.4. Testing of the hypothesis

Table 7 reveals the significance of the correlation between teacher's engagement and students' motivation to learn mathematics. It can be gleaned that the teacher's engagement and the students' motivation to learn mathematics registered a Pearson "r" correlation coefficient value of 0.8051 with the probability value of 0.0108, which is less than the 0.05 level of significance. Therefore, there is enough evidence to accept the alternative hypothesis and establish a significant correlation. The foregoing result tells that teacher's engagement is closely associated with the student's motivation to learn mathematics. Furthermore, the result implies that a high level of teacher engagement in mathematics can be a vital contributing factor for students to be highly motivated in learning the subject and be academically successful in the future.

Table 7. The correlation between teacher's engagement and students' motivation

Parameters	Findings
Pearson "r" Value	0.8051
Probability	0.0108
Decision of the Hypothesis	Accept
Interpretation	With Significant Relationship

3.2. Discussion

The data indicated in Table 1 present the level of teacher's engagement in teaching mathematics as a subject. From the given data, it can be inferred that the teacher is highly engaged as shown by her positive body language and behavior, consistent focus, verbal participation, confidence, interest and enthusiasm, individual attention, clarity of teaching, meaningfulness of work, rigorous thinking, and performance orientation. The foregoing result is supported by the interview data indicating that the teacher often pays attention to students' needs by speaking in vernacular and repeating questions and answers to help her students comprehend. She often minimizes class disruptions by using the principle of with-it-ness (having eyes at the back), as well as prohibiting them to do unnecessary things inside the classroom while she is teaching. She likewise often asks varied questions in order to help her students understand the lessons. The teacher, however, uses several strategies to help students think rigorously, to make their work meaningful, participate verbally, make teaching clear, become oriented with their performance, become interested and enthusiastic, as well as confident. These manifestations of engagement support Mark's (2000) finding that teachers' engagement is essential to their professional motivation when their work is focused on making their students work well in the classroom as well as make them think and feel that teaching and learning are essential to their successes in life. Furthermore, teachers who are highly engaged show interest in student performance and achievement outcomes as reflected in curriculum preparation, collaboration, quality of instruction, assessment modes, and student feedback (Louis & Smith, 1992).

The data presented in Tables 2, 3, 4, and 5 indicate students' motivation to learn mathematics in terms of interest, relevance, confidence, and satisfaction. From the data presented, it can be deduced that students highly manifest curiosity to learn mathematical concepts and skills and perceive the subject matter content in their mathematics subject as very significant. They likewise demonstrate their locus of control, personal causation, and learned helplessness in different tasks and activities, as well as satisfaction in their

performance of the assigned tasks, knowing that their teacher appreciates and reinforces rewards or recognitions for the jobs and outputs they have done well. In addition, the qualitative responses of students during the focus group discussion show that although learning mathematics is interesting and fun, they sometimes find it frustrating as some concepts and skills are difficult to understand. They also see mathematics as highly relevant as it really helps them in reaching their goals and dreams in life. They likewise perceive it very useful in solving their problems as learning mathematics allows them to confront and solve problems which relate to practical situations. They also view learning mathematics as a highly rewarding activity as it affords them learning that they can use in real life. The foregoing results affirm Xiang, Bruene, and Chen's (2005) finding that student's individual interest plays an essential role in the learners' preference to engage in classroom tasks and activities. They also support Willms, Friesen, and Milton's (2009) observation that students want their work to be intellectually engaging and relevant to their lives. They also prove Willms, Friesen, and Milton's (2009) finding that working with authentic problems engages students and builds a sense of purpose to the learning experiences. Furthermore, the results highlight the importance of feedback and reinforcement as essential elements, as learners become motivated to learn when they appreciate the results, or their performances and outputs are appreciated by their teachers (Wiers-Jenssen et al., 2002).

The summary data shown in Table 6 reflect students' motivation to learn mathematics as to interest, relevance, confidence, and satisfaction. From the said data, it can be inferred that students highly demonstrate curiosity to learn mathematical concepts and skills, view mathematics as a relevant subject, possess confidence to perform authentic classroom tasks and activities, as well as believe that learning mathematics is a rewarding and fulfilling activity. These results strongly support Skinner and Belmont's (1993) claim that motivated students generally exhibit positive emotions like interest, curiosity, enthusiasm, and optimism. Moreover, they select authentic tasks and initiate actions when given the opportunity, as well as exert intense effort and concentration in the implementation of learning tasks and activities.

The data indicated in Table 7 denote the significance of the correlation between teacher's engagement and students' motivation to learn Mathematics. From the given data, the analysis shows that teacher's engagement contributes positively to students' motivation in learning mathematics as a subject. It entails that the more engaged the teacher is in teaching essential concepts and skills in mathematics, the more motivated the students will be in learning the same. The foregoing result affirms Darling-Hammond and Snyder's (2000) finding that teacher engagement significantly improves students' gains not only in reading but also in mathematics. Moreover, it strongly supports Basikin's (2007) claim that a high level of teacher engagement is an essential ingredient for the success of schools, and is an important predictor of academic achievement.

4. CONCLUSION

The findings of the study indicate that teacher's engagement in teaching affects students' motivation in learn mathematics as a subject, thereby establishing a close association between the two variables under investigation. Furthermore, there is a corroboration between the quantitative data obtained from the survey and the qualitative data acquired during the interview and focus group discussion. However, the results obtained from this study could not be adequately accepted as the basis not to devise an intervention program. Hence, the study then recommends that an action plan can be cooperatively formulated by teachers and students, through the guidance and assistance of school

administrators, to enhance teacher's engagement in mathematics as well as students' motivation to learn mathematics.

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