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Teaching Methods In Mathematics And School Climate On Students' Affective Domain

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Abstract: *During the 2019–2020 school year, it ascertained the connection between junior high school students' affective domain in mathematics and school atmosphere. The study's findings, which included 16 math teachers and 612 students as respondents, indicated that the Problem-Solving Method is the approach that teachers most frequently employ while instructing the subject. Both students and teachers who responded strongly agreed that they had an effective teaching strategy when it came to mathematics. Similarly, there was considerable agreement among these groups of respondents thought the school climate was pleasant.The learner responders, on the other hand, concurred that they felt, thought, and acted positively toward mathematics. According to the study's findings, there is no discernible difference between how teachers and students view their respective approaches to teaching mathematics. Students' affective domain in mathematics and the frequency with which teachers employ teaching strategies are significantly correlated. Teaching strategies and students' affective domain in mathematics are significantly correlated. Students' affective domain in mathematics and school climate are significantly correlated.*

Keywords: Teaching strategies, school climate, affective domain

CHAPTER I

THE PROBLEM AND ITS BACKGROUND

Introduction

Mathematics subject is known as foundation because it is the base of science and technology and without science and technology no nation can achieve the task of development. Mathematics is a subject which starts from school level and provides the base for the science. In education the importance of mathematics is undeniable and it boosts the learning process. It also brings the change in the learning process and has impact on all other subjects of science.

In the past several decades, there had been significant advances in the understanding of the complex processes involved in problem–solving. Approaches like teaching for problem–solving, teaching through problem–solving and teaching about problem–solving have brought about significant improvements in the problem–solving skills of students. However, these improvements have not lifted the rank of the Philippines in both the National Achievement Test (NAT) and in international examination, vis-à-vis, the Third International Mathematics and Science Study (TIMSS).

Additionally, a study made by Dela Cruz and Lapinid (2014), has shown that 40% of their respondents are below the satisfactory level in translating worded problems due to the following difficulties: carelessness, lack of comprehension, interchanging values, and unfamiliar words. Furthermore, Lee – Chua (2012), reported that the Filipino students' attitude towards mathematics has always been a great concern and mathematics is feared due to the following reasons: terror teachers, learned helplessness, neglectful or pressure-inducing parents, society's denigration of deep thought, instant gratification, lack of motivation, and failure in examinations.

According to Pascual (2014), he reiterated that to address the need to develop science, mathematics and technology performance of students, the Philippine government encourages school institutions to adopt science and mathematics curriculum in response to Republic Act 7678 which states, that "The state shall give priority to research and development, invention, innovation and their utilization and to science and technology education, training and services".

In the foundation of teaching and learning process instructional strategies plays a vital role for the countries' development. Johnson and Cyrnferg (2017), explained the need and indicator of changes in the proceeding of teaching mathematics. A process of learning is hidden in it and this situation may motivate the students to learn and to understand the process that is adopted by the teachers in classrooms. It is assessed that at school level a method of teaching must be selected by the teachers which should be interesting for the students.

In addition to this, Stoneski and Chowkey (2017), reported that to facilitate the process of knowledge transmission, teachers should apply appropriate teaching strategies that best suit specific objectives and level exit outcomes. In the traditional epoch, many teaching practitioners widely applied teacher-centered strategies to impart knowledge

to learners comparative to student-centered methods. Until today, questions about the effectiveness of teaching strategies on student learning have consistently raised considerable interest in the thematic field of educational research. Moreover, research on teaching and learning constantly endeavor to examine the extent to which different teaching strategies enhance growth in student learning.

Consequently, Camarro (2012), posited that teaching at any level of education has the sole purpose of ensuring that all learners can acquire information and apply those skills. Therefore, it is incumbent upon all educators to know their teaching strategy so that teaching has a two-fold purpose where teachers teach and students learn. Additionally, knowing how the students learn and what strategies best fit in the classroom and school are fundamental in the process of learning. Most of the teaching strategies today have embraced modern technology and this has brought tremendous changes in the field of learning.

Based on the study of Song and Kang (2012), both opined that meta-analytic studies about the relationship between computer aided instruction (CAI) and students' achievement in comparison with traditional instruction have shown that CAI has a positive impact on students' achievement level. Further, their study revealed that on average, students who were exposed to CAI scored higher than students without computers.

Accordingly, Ayeni (2011), reported that quite remarkably, regular poor academic performance by the majority students is fundamentally linked to application of ineffective teaching methods by teachers to impact knowledge to learners. Further, he also stated that the effectiveness of teaching methods is often reflected by the achievements of learners. Additionally, he asserted that teaching is a process that involves bringing about desirable changes in learners so as to achieve specific outcomes. In order for the strategy used for teaching to be effective, Adunola (2011), maintains that teachers need to be conversant with numerous teaching strategies that take recognition of the magnitude of complexity of the concepts to be covered.

In relation to the study of Chang (2010), sustained that teaching strategies work effectively mainly if they suit learners' needs since every learner interprets and responds to questions in a unique way. As such, alignment of teaching strategies with students' needs and preferred learning influence students' academic attainments.

Meanwhile, School climate has become increasingly popular in discussions of school success. School climate is a broad term used to describe the school environment, and while it has no consensus definition, reviews of the topic have identified several recurring themes: (a) order, safety, and discipline; (b) academic supports; (c) personal and social relationships; (d) school facilities; and (e) school connectedness (Austin, O'Malley, & Izu, 2011).

Consequently, Hanson, Austin and Zheng (2011), affirmed that a positive school climate has been associated with higher academic achievement and healthy behavioral outcomes for students. Moreover, they found multiple dimensions of school climate to be significantly associated with student academic, behavioral, and socio-emotional well-being in a large, nationally representative sample of middle school students.

Agreeably, Santos (2011), further stated that school climate affects the quality of life in an educational institution experienced not only by the students but also parents, teachers and administrators as well. It is a construct which pertains to a multifaceted aspect of a learners' and other stakeholders' educational experience.

School climate studies provide useful information for school administrators who are interested in building healthy relations in their schools. For these leaders who seek innovative ways of improving their school environment and, thus, the academic success of their students, school climate studies merit some attention.

Given these scenarios in mathematics education, the researcher prompted to provide further insights on the topic of school climate as it focuses on its influence on the affective domain in Mathematics of students in secondary schools. Additionally, the teaching method of the teachers in Mathematics were also considered in the present study.

Statement of the Problem

The study determined the relationships between teachers' instructional teaching methods and students' affective domain. Further, it determined the relationship between school climate and the affective domain of the students in Mathematics in junior high schools during the School Year 2019-2020.

Specifically, it sought answers to the following questions:

1. How frequent do teachers of Mathematics utilize the following teaching methods in their respective classes?
   - 1.1 Inductive;
   - 1.2 Deductive;
   - 1.3 Lecture;
   - 1.4 Demonstration;
   - 1.5 Integrative;
   - 1.6 Type-Study;
   - 1.7 Problem-Solving;
   - 1.8 Project; and
   - 1.9 Expository?
2. How may the following factors in teaching Mathematics as perceived by the teachers themselves and their respective students be described:
   - 2.1 content and objectives;
   - 2.2 class environment;
   - 2.3 use of effective methods;
   - 2.4 class management;
   - 2.5 course objectives and examination system; and
   - 2.6 preparation of lesson planning?

3. How may the school climate as perceived by the students and their respective teachers be described in terms of:
   - 3.1 safety;
     - 3.1.1 safety rules and norms;
   - 3.2 teaching and learning;
     - 3.2.1 support for learning;
     - 3.2.2 social and civic learning;
   - 3.3 interpersonal relationships
     - 3.3.1 respect for diversity;
     - 3.3.2 social support / adults;
     - 3.3.3 social support / students;
   - 3.4 school environment;
     - 3.4.1 school connectedness / engagement;
     - 3.4.2 physical surroundings;
   - 3.5 social media?
4. How may the students' affective domain in Mathematics learning be described in terms of:
   - 4.1 beliefs in Mathematics;
     - 4.1.1 time;
     - 4.1.2 steps;
     - 4.1.3 understanding;
     - 4.1.4 usefulness;
   - 4.2 attitude towards Mathematics;
     - 4.2.1 interest;
     - 4.2.2 preference for understanding;
     - 4.2.3 confidence;
     - 4.2.4 competence;
     - 4.2.5 textbook, classroom learning and outside-class learning;
   - 4.3 emotions in Mathematics;
     - 4.3.1 class related emotions;
     - 4.3.2 learning related emotions; and
     - 4.3.3 test emotions?
5. Is there a significant difference between the perceptions of the students and the teachers themselves with regard to some factors in teaching Mathematics?
6. Is a there significant relationship between the teachers' frequency of use of instructional strategies and the students' affective domain in Mathematics?
7. Is there a significant relationship between some factors in teaching Mathematics and students' affective domain in the said subject?
8. Is there a significant relationship between school climate and students' affective domain in mathematics?
9. How important are the teaching methods and school climate in Mathematics in the development of students' affective domain in the said subject?
10. Based on the findings of the study, what program of activities could be offered by the researcher?

Hypothesis

This study was guided by the following hypotheses:

1. There is no significant difference between the perceptions of the students and the teachers themselves with regard to some factors in teaching Mathematics.
2. There is no significant relationship between the teachers' frequency of use of teaching method and the students' affective domain in Mathematics.
3. There is no significant relationship between some factors in teaching Mathematics and students' affective domain in the said subject.
4. There is no significant relationship between school climate and students' affective domain in Mathematics.

Conceptual Framework

The primary purpose of teaching at any level of education is to bring a
fundamental change in the learner (Tebabal and Kahssay, 2011). The poor academic performance by the majority students is fundamentally linked to application of ineffective teaching strategies by the teachers to impact knowledge to learners. Substantial research on the effectiveness of teaching strategies indicates that the quality of teaching is often reflected by the achievements of learners. Moreover, they also indicated that in order to bring desirable changes in students, teaching strategies used by educators should be best for the subject matter.

Furthermore, Hightower (2011), opined that teaching strategies work effectively mainly if they suit learners' needs since every learner interprets and responds to questions in a unique way. As such, alignment of teaching strategies with students' needs and preferred learning influence students' academic attainments.

According to Vincent and Akpan (2014), teaching strategies are decisions about organizing people, materials and ideas to provide learning. Additionally, they viewed teaching strategies as both the teaching method and the materials used in the process of teaching. Some of these teaching strategies include inquiry, discussion, lecture and demonstration, among others. Furthermore, they stated that lecture strategy contains a verbal presentation of ideas, facts, concepts and generalizations. The practice of this method is that of spoon-feeding the learners with facts or information. The students remain passive and obtain information from their teacher.

Meanwhile, Akinbobola and Ikitde (2011), defined demonstration strategy as a method of teaching concepts, principles of real things by combining explanation with handling or manipulation of real things, materials or equipment. The demonstration strategy is effective for long-term memory retention and appropriate to college students' study skills (McCabe, 2014). The act of demonstrating readily helps to kindle more natural interactions between the students and the

teacher. Their active responses and completely spontaneous observations provide an excellent opportunity for the teacher to connect with them and with their unedited ideas.

This study is anchored to the Bloom's Theory of the Taxonomy of Learning and the theory Transformative Classroom Management.

The theory contented that any person can learn when given appropriate and positive learning environment. Bloom further stated that, teacher must first understand how people learn in order to teach effectively and efficiently. Learning depends on the learning environment and on the student's motivation, learning preferences, and their ability to learn. An ideal learning environment allowed the students to attend to instruction and through motivation such as reinforcement or reward addresses student's desire or willingness to learn.

Utilizing Bloom's theory, this study aimed to determine the influence of Mathematics teachers' strategies and school climate on students' affective domain. By doing so, the researcher was able to identify an ideal learning environment that will allow students to attend the classes, be motivated to work, to learn since learning depends on the learning environment and on the student's motivation as what Bloom's emphasized.

The Bloom's theory as mentioned earlier was complimented to focus on school climate. According to Cohen, McCabe, Michelli and Pickeral (2009), there was a common contention among most education experts and researchers that school climate is a condition which is the result of the ―quality and character of school life. Further, school climate is one of the critical elements which contribute to holistic success of any school. A climate of a school involves collaboration between human, physical and material resources. Additionally, Adeogun and Olisaemeka (2011), defines school climate as an aggregate measure of school characteristics, such as relationships between parents, teachers, administrators as well as physical facilities on the ground. Moreover, they stated that school climate is the heart and soul of the school that draws teachers and students to love the school and to want to be a part of it.

As a consequence, Bergren (2014), conducted a study on the impact of school climate on student achievement in the middle schools. The findings of the study revealed that selected school climate factors such as social economic status (SES), attendance and school size collectively had an influence on students' achievement and teachers' job satisfaction. Though, when the factors were examined individually, school size had the least influence on students' achievement whereas SES had the most influence.

Similarly, Adeogun and Olisaemeka (2011), undertook a study to determine the influence of school climate on students' achievement and teacher productivity for sustainable development in secondary schools. The results revealed that selected school climate factors such as working conditions, learning environment, home-school relationship, socio-physical environment, safety and security, discipline, and teacher care and support had a significant relationship with performance and productivity.

Consequently, Dagnew (2014), examined the impact of school climate on students' academic achievement in secondary schools. The study focused on teacher-student relationship, student-peer relationship, administration, security and maintenance of the school and academic orientation of school climate aspects. The results revealed that security and maintenance of the school aspect had an impact on students' academic achievement.

Eventually, Nyamosi (2013), also investigated the influence of school climate on pupils' performance in elementary school. The results of this study revealed that adequacy of teaching-learning resources and interpersonal relationships influenced teachers and pupils' performance.

Concerning the study of Jagero (2011), he evaluated school environmental factors affecting performance of boarding secondary students. Specifically, the study attempted to investigate school environmental factors affecting both girls and boys as they strive to achieve academic excellence. The findings of the study revealed that insufficient lighting system, inadequate teaching-learning materials and facilities, students' indiscipline, lack of proper diet, inadequate dormitories accommodation and sanitary facilities as factors affecting boarding secondary students in the country.

A study conducted by Usaini and Bakar (2015), on influence of school environment on academic performance of secondary school students had revealed that schools with adequate facilities, adequate teachers and favourable environment influenced students' academic performance. Similarly, Odeh, Oguche and Ivagher (2015) in their study on influence of school environment on academic achievement of students in secondary schools found out that physical facilities and discipline influenced academic achievement of students.

Kozina, Rozman, Perse and Leban (2008), conducted a study on the school climate as a predictor of the achievement: A students', teachers' and principals' perspective. The study found out that teachers and principals perceived that school climate factors interpersonal relationship and formal organization influenced students' academic achievement in Mathematics and Physics subjects. However, students perceived that the four school climate factors did not influence their academic achievement in Mathematics and Physics subjects.

Selamat et al., (2013), emphasized that climate plays a very significant part in defining academic accomplishment of the learners. Out of organizational research and studies in school effectiveness, stemmed the formal study of school climate. Schools are societal foundations involving diverse workers like educators and managers with apparent ranks and required functions. Divergent from each other are the responsibilities, functions, and standards which are assigned to them. Educational institutions are ranked organizations, in this pecking order at the top locus there is a school manager or director, headmaster or principal, and then the common teachers are at the lowermost strata of the hierarchy.

Mostly the reviewed studies focused on the influence of school climate on students' academic performance.

However, the present study determined the relationship between school climate and students' affective domain.

Educators and researchers have recognized the value and importance of the affective domain in the taxonomy of educational objectives. Affective Domain Taxonomy was first published in 1973 and in this taxonomy Krathwohl, Bloom and Masia ordered the objectives according to the principle of internalization. Given the complexity of the affective domain, it should be noted that only beliefs, attitudes and emotions in relation to Mathematics, will be considered in the present study.

In this regard, Devine, Fawcett, Szűcs, and Dowker (2012), affirmed that beliefs about mathematics are considered as one of the components of individual's implicit subjective knowledge, based on experiences about mathematics and its teaching and learning.

From the perspective of Mathematical education, Hidalgo, Maroto, Ortega and Palacios (2013), reiterated that beliefs have been analyzed with two different orientations, one related to the acquisition of new concepts based on previous knowledge and beliefs and the other based on the so-called mathematical emotional profile. The idea of this emotional profile assumes the existence of a bidirectional relation between emotions, attitudes and beliefs on the one hand, and performance on the other; in the sense that the experience of learning mathematics provokes reactions and influences beliefs, and conversely, the latter influence in the capacity of. Moreover, these researchers obtained relations between beliefs and the rejection of students towards mathematics, when attempting to identify their mathematical emotional profiles.

Within the concept of attitude towards mathematics education, Fraser (2012), asserted that there are two main concepts that can be discerned: attitudes towards mathematics and mathematical attitudes. Attitudes towards mathematics are related to the value, appreciation and preference given to this discipline, placing more emphasis on the affective than the cognitive side, and is manifested in terms of interest, satisfaction, curiosity, appreciation, etc.. Mathematical attitudes, on the contrary, are more related to the use of general abilities that are relevant in the mathematical tasks (such as open-mindedness, flexibility in the solution-seeking of problems and reflective thinking), aspects more related to cognition than affection.

Relating to Birbeck and Andre (2009), rightly point out that the affective domain is a vague concept that could relate to at least three different aspects of teaching and learning. According to them, the affective domain firstly, could be about the teacher's approach to teaching in terms of Philosophy and what this communicates to the student. In this case, the affective domain relates to the way in which the teacher interacts with students to establish a relationship. Secondly, the affective domain could be about stirring up the affective attributes of students as a deliberate form of engagement. The essence of such a method could be to show disapproval or annoyance at an act of injustice and by so doing, some students may be encouraged to take a greater level of participation. With the first and second perspective of affective domain, the onus is on the teacher to establish the learning environment. It is expected that students will respond positively or otherwise. However, they do not initiate. Thirdly, the affective domain could be about learners being engaged with the development and understanding of their own motivations, attitudes, values and feelings with respect to behavior as a citizen and a professional. The discussion in this paper is based on the third perspective.

Dealing with the study of Popham, (2011), argues that the reason such affective variables such as students' attitudes, interest and values are important is because they typically influence future behavior. He highlights further that it is necessary to promote positive attitudes towards learning because students who have positive attitudes towards learning today will be inclined to pursue learning in the future.

The theories and literature that were discussed above provided the framework of the conduct in this study. The interplay of the mathematics teaching strategies and school climate in students' affective domain in mathematics was explored to provide meaningful information on the findings of the previous studies regarding these variables.

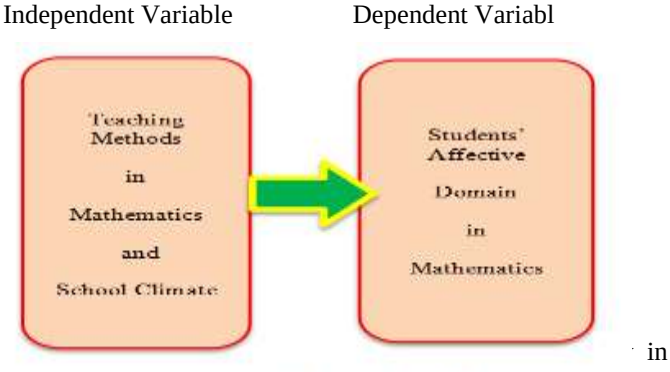

Figure 1. Paradigm of the Study

It can be noted from Figure 1 that the independent variables are the teaching methods and school climate in Mathematics. These variables were hypothesized (as implied by the arrowhead) to have a significant relationship with the dependent variable which is the students' affective domain in Mathematics.

Significance of the Study

Findings of this study will be beneficial to the following:

School Principal. From the results of the study, school principals could arrive at a certain program for the modernization and improvement of the school environment. Moreover, this could give them the idea of discovering in

Teachers. The study may offer relevant data about the effectiveness of their teaching method with respect to the level of development of students' affective domain which will result to better performance in Mathematics. Moreover, teachers will

be more motivated to contribute for the improvement of school environment.

Parents. Results of this study could be an eye-opener for the parents that they can contribute for the development of the school environment which is commonly happening in elementary schools.

Senior High School Students. The result of this study may provide the student with information regarding the influence of teachers' strategies in teaching Mathematics and school climate to their level of affective domain.

Other Researchers. Findings of the study can be used as reference by other researchers who have the same interest in the topic of concern.

Scope and Limitation of the Study

Variables such as teaching strategies, school climate and students' affective domain in Mathematics were the main concern of the present study.

Factors in teaching of Mathematics were limited to content and objectives, class environment, use of effective methods, class management, course objectives and examination system, and the preparation of lesson plan.

Meanwhile, the school climate focused only to safety (safety rules and norms), teaching and learning (support for learning, social and civic learning), interpersonal relationships (respect for diversity, social support / adults, social support / students), school environment (school connectedness / engagement, physical surroundings), and social media.

On the other hand, students' affective domain was limited only to mathematical beliefs (time, steps, understanding, usefulness), attitude towards Mathematics (interest, preference for understanding, competence, textbook, classroom learning and outside-class learning), and emotions in Mathematics (class related emotions, learning related emotions, test emotions).

The following terms were used throughout the proposal an
d were defined as follows:

Affective Domain. It refers to the way in which students learn to deal with Mathematics emotionally such as attitudes, values, enthusiasms, appreciation, motivations, and feelings.

Attitude towards Mathematics. It refers to student's organized predisposition to think, feel, perceive and behave toward mathematics.

Class Environment. It refers to a broad range of educational concepts, including the physical setting, the psychological environment created through social contexts, and numerous instructional components related to teacher characteristics and behaviors.

Class Management. It refers to the wide variety of skills and techniques that teachers use to keep students organized, orderly, focused, attentive on task, and academically productive during a class.

The respondents of the study were the teachers and students in selected secondary schools in EDDIS III. This was conducted in the 2nd semester of School Year 2019-2020.

Location of the Study

This study was conducted at Carlos F. Gonzales High School located at Cruz na Daan, San Rafael, Bulacan; San Ildefonso National High School (where the researcher is currently employed) in Poblacion, San Ildefonso, Bulacan; and San Miguel National High School in Poblacion, San Miguel, Bulacan. These were the most populated secondary schools in the Educational District III (EDDIS III).

(Source: www.wikipedia.org)

Figure 2. Map of Bulacan

Definition of Terms

Class Related Emotions. These refer to students' positive or negative experience in Mathematics class.

Competence. It refers to students' knowledge in numerical computations and solving word problems.

Content and Objectives. These refer to what students should know and be able to do at the end of the lesson and leads to assessment.

Course Objectives. These refer to specific a behavior, skill, or action that a student can demonstrate if they have achieved mastery of the objective.

Deductive Method. It refers to teaching strategy in Mathematics wherein the teacher gives the students a new concept, explains it, and then let the students practice using the concept.

Demonstration Method. It refers to a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process

of teaching someone how to make or do something in a step-by-step process.

Emotions in Mathematics. These refer to sets of interrelated psychological processes, whereby affective, cognitive, motivational, and physiological components are of primary importance

Examination System. It refers to an assessment which measures students' learning in Mathematics.

Expository Method. It refers to teaching strategy where the teacher presents students with the subject matter rules and provides examples that illustrate the rules.

Inductive Method. It refers to teaching strategy in Mathematics wherein the teacher presents students with many examples showing how the concept is used.

Instructional Strategies. These refer to the techniques or methods that a teacher can adopt to meet the various learning objectives.

Integrative Method. It refers to a well-organized strategy anchored on real life situation that includes learners' interests and needs creating a variety of meaningful activities and learning experiences.

Interest. It refers to students' interest in solving mathematical problems, attending classes in Math, and mathematical calculations.

Interpersonal Relationships. It refers to school climate aspects such as respect for diversity, social support / adults, and social support / students.

Learning Related Emotions. These refer to students' positive or negative experience while learning mathematical concepts.

Lecture Method. It refers to the method of instruction in which the teacher has full responsibility for presenting facts and principles orally. It is an oral presentation of information by the teacher.

Mathematics Beliefs. These refer to the students' feelings about mathematics, aspects of the classroom, or about themselves as learners of mathematics.

Physical Surroundings. These refer to cleanliness, order, and appeal of facilities and adequate resources and materials.

Preference for Understanding. It refers to students' style to acquire new skills and knowledge, and to remember things in Mathematics.

Preparation of Lesson Plan. It refers to preparation of teacher's detailed description of the course of instruction or "learning trajectory" for a lesson. A daily lesson plan is developed by a teacher to guide class learning.

Problem-Solving Method. It refers to the process of applying a method – not known in advance – to a problem that is subject to a specific set of conditions and that the problem solver has not seen before in order to obtain a satisfactory solution.

Project Method. It refers to a teacher-facilitated collaborative approach in which students acquire and apply knowledge and skills to define and solve realistic problems using a process of extended inquiry. Projects are student-centered, following standards, parameters, and milestones clearly identified by the instructor.

Respect for Diversity. It refers to mutual respect for individual differences (e.g. gender, race, culture, etc.) at all levels of the school—student-student; adult student; adult-adult and overall norms for tolerance.

Safety. It refers to school climate aspects such as safety rules and norms.

Safety Rules and Norms. These refer to clearly communicated rules about physical violence; verbal abuse, harassment, and teasing; clear and consistent enforcement and norms for adult intervention.

School Climate. It refers to an aggregate measure of school characteristics, such as relationships among parents, teachers and administrators as well as physical facilities on the ground.

School Connectedness / Engagement. It refers to positive identification with the school and norms for broad participation in school life for students, staff, and families.

School Environment. It refers to school climate aspects such as connectedness / engagement and physical surroundings.

Social and Civic Learning. It refers to support for the development of social and civic knowledge, skills, and dispositions including: effective listening, conflict resolution, self-reflection and emotional regulation, empathy, personal responsibility, and ethical decision making.

Social Media. It refers to sense that students feel safe from physical harm, verbal abuse/teasing, gossip, and exclusion when online or on electronic devices (for example, facebook, twitter, and other social media platforms, by an email, text messaging, posting photo/video, etc.).

Social Support / Adults. It refers to pattern of supportive and caring adult relationships for students, including high expectations for students' success' willingness to listen to students and to get to know them as individuals' and personal concern for students' problems.

Social Support / Students. It refers to pattern of supportive peer relationships for students, including: friendships for socializing, for problems, for academic help, and for new students.

Support for Learning. It refers to the use of supportive teaching practices, such as: encouragement and constructive feedback; varied opportunities to demonstrate knowledge and skills; support for risk-taking and independent thinking; atmosphere conducive to dialog and questioning; academic challenge; and individual attention.

Steps. These refer to students' beliefs about the complexity of mathematical problems.

Teaching and Learning. It refers to school climate aspects such as support for learning, and social and civic learning.

Teaching Strategies. These refer to the structure, system, methods, techniques, procedures and processes that a teacher uses during instruction. These are strategies the teacher employs to assist student learning.

Test emotions. These refer to students' positive or negative experience while taking tests in Mathematics.

Textbook. It refers to books in Mathematics being used by the students.

Time. It refers to students' beliefs about the time it takes to solve mathematical problems.

Type-Study Method. It refers to an inductive procedure except that only one case is studied. A typical case is taken for detailed examination. The type study method aims to study a typical case thoroughly and in detail so as to make the concepts gathered as basis for comparison in studying similar case. It also aims to recognize into a coherent whole all necessary and related details.

Understanding. It refers to students' beliefs about the importance of understanding concepts in Mathematics.

Usefulness. It refers to students' beliefs about the usefulness of mathematics in daily life.

Use of Effective Methods. It refers to the teachers' choice of instructional strategies which they believed are effective in teaching Mathematics.

CHAPTER II

METHODOLOGY

The information about the research and sampling procedures that were utilized by the researcher are provided in this chapter. The research design that was employed, as well as the data gathering techniques, and data analysis scheme are also discussed in this chapter.

Research Design

The aim of the study combines the strengths of both quantitative and qualitative research, linking concepts and views and comparing findings with data from different situations and times. Thus, the researcher utilized the mixed methods design which composed of quantitative and qualitative phases.

In the quantitative phase of the study, the researcher collected the perceptions of the respondents as regards to instructional strategies in Mathematics. Further, she collected quantitative data from the perceptions of the respondents with regard to school climate and affective domain in Mathematics.

During the qualitative phase, the researcher explored the views and insights of the respondents as regards the importance of instructional strategies and school climate on the development of students' affective domain in Mathematics. This was done through semi-structured interviews with the teachers and students.

In the mixed methods analysis phase, the researcher integrated the findings from the interview to the quantitative results of the study. This was done to arrive at a more in-depth analysis and comprehensive discussions of the answers to the problems raised in the preceding chapter.

Data Gathering Techniques

Prior to the conduct of the study, the researcher sought permission from the Schools Division Superintendent of Bulacan. After receiving the approved permit, coordination with the principal of the school-respondents was done.

Data collection was done in two distinct phases. Phase 1 was for quantitative data gathering while Phase 2 was for the collection of qualitative data.

In phase I of the study, questionnaires were used in gathering the needed quantitative data composed of four (4) parts. Part I of the questionnaire which utilized to describe the frequency of use of various instructional strategies in teaching Mathematics and was adapted from Ramos (2015). On the other hand, Part II was adapted from Khan, Zubair Haider, and Bukhari (2016) used to describe the instructional strategies implemented by teachers of Mat s. Meanwhile, Part III was adapted from Reblando (20 ich gauged the school climate of the respondents. Part divided into three (3) wherein IV-A was adapted from n (2012) this was used to describe the students' beliefs ir natics; Then IV-B was adapted from Guze (2013) was utilized to describe the students' attitude towards Mathematics; and Lastly IV-C was adapted from Pekrun (2011) Which used to describe the students' emotions about Mathematics. These questionnaires were slightly modified by the researcher with the guidance of her adviser in order to fit the current settings of the educational system in the country and in order to suit to the generation of the students today.

In phase 2 of the data collection, the open-ended questions were personally made by the researcher and were asked to selected respondents during the semi-structured interviews. The data gathered in this phase were integrated and used to validate and further explain in support to the quantitative findings of the study.

Sampling Procedures

The researcher used purposive sampling in selecting the school respondents of the study. Only three (3) mother schools in the Division of Bulacan, located in the town of San Rafael (Carlos F. Gonzales High School), San Ildefonso (San Ildefonso National High School) and San Miguel (San Miguel National High School), were requested to participate in this research.

Table 1 shows that a total of 3,056 junior high school students constituted the population for this research. After getting the 20 percent of the population for each school, a total of 612 sample was determined. This sample-students were selected at random using the fishbowl technique. This was done by writing all the names of the students in a sheet of paper. After doing this, the papers were rolled very tightly and placed in a bowl. From there, the 20 percent sample students were picked up. The researcher assured that the 612 sample-students were proportionate to the number of junior high school in each grade level.

According to Gay et al., (2009), the minimum acceptable sizes depending on the types of research, ten percent of the population is already appropriate for bigger population in a descriptive type of the study.

For the qualitative part of the study, the researcher selected by random two teachers and three students in each school to participate in the semi-structured interview. These respondents were given prior information about the topics that were discussed for them to be ready in the said interview.

Table 1. Distribution of Students Respondents

School	Students		Teachers
	Population	Sample	
1. San Miguel National High School	1720	344	8
2. Carlos F. Gonzales High School	688	138	4
3. San Ildefonso National High School	648	130	4
Total	3056	612	16

Data Analysis Scheme

After collecting all the questionnaires, these were tabulated, tallied, analyzed and interpreted using some statistical tools.

Descriptive statistics such as weighted mean was computed to describe the (a) frequency of use of instructional strategies in Mathematics (b) teachers use of instructional strategies in teaching of Mathematics, (c) school climate, and (d) students' affective domain in Mathematics.

T-test analysis was performed to determine if significant difference existed between the perceptions of the students and the teachers themselves as regards their use of instructional strategies in teaching of Mathematics.

Pearson Product-Moment Correlation Coefficient analysis was performed to determine if significant correlations existed between the dependent and independent variables.

CHAPTER III

RESULTS AND DISCUSSIONS

This chapter deals with the presentation, analysis and interpretation of the data collected and the results of the statistical treatment employed in the study with the purpose of determining the relationships between Mathematics teaching methods and students' affective domain. Further, it determined the relationship between school climate and the Mathematics affective domain of the students in junior high schools.

Teaching Methods Utilized by Mathematics Teachers

Teaching Methods are the techniques that a teacher can adopt to meet the various learning objectives. These strategies help students to walk on the path of independent learning and become strategic learners. They equip teachers to make learning fun and help students to awaken their desire to learn.

Table 2. Mathematics Teaching Method

Teaching Methods	Responses (N=16)					Mean	VD
	5	4	3	2	1		
1. Inductive	9	5	1	1	0	4.38	A
2. Deductive	10	4	1	1	0	4.44	A
3. Lecture	6	3	5	1	1	3.75	F
4. Demonstration	8	6	2	0	0	4.38	A
5. Integrative	9	4	3	1	0	4.50	A
6. Type-Study	6	3	4	3	0	3.75	F
7. Problem-Solving	11	5	0	0	0	4.69	A
8. Project	5	6	3	1	1	3.81	F
9. Expository	10	6	0	0	0	4.63	A
Overall Mean						4.26	A

Legend:

Scale	Verbal Descriptio			
2.61 – 3.40	Seldom (S)			
4.21 – 5.00	Always (A)	1.81	–	2.60
Rarely (R)				
3.41 – 4.20	Frequently (F)			
1.00 – 1.80	Never (N)			

Table 2 presents the different teaching methods in Mathematics. It can be gleaned from the table that Problem-Solving Method registered the highest computed weighted mean of 4.69 which is verbally described as "always". Meanwhile, Lecture Method and Type-Study Method received the lowest computed weighted mean of 3.75 respectively which is verbally interpreted as "frequently". The overall mean was recorded at 4.26 with a verbal description of "always".

Results implicate that most of the teachers opted to use Problem-Solving Method in relaying every lesson to students. This is a method where students can understand Math subject very well. On the contrary, instructors least prefer using lecture method and type-study method.

The study of Vincent and Akpan (2014), explains that problem-solving method stresses critical thinking and decision-making skills. It also requires the application of previously learned procedures.

Moreover, Tambychik and Meerah (2010), added that problem solving provides a working framework to apply Mathematics, and well-chosen mathematics problems provide students with the opportunity to solidify and extend what they know and can stimulate students' learning of Mathematics.

A true problem-solving process will allow students to be flexible, intuitive, and creative. The students should be allowed to move from one step to another, and through many alternatives and strategies. Finding great problem-solving situation is a challenge, but it is crucial if the goal is to be effective (Ortiz, 2016).

On the other hand, Vincent and Akpan (2014), stated that lecture strategy contains a verbal presentation of ideas, facts, concepts and generalizations. The practice of this method

is that of spoon-feeding the learners with facts or information. The students remain passive and obtain information from their teacher.

Results of the semi-structured interviews supported the quantitative findings of the study. When the teachers were asked about the strategies that they commonly used in presenting lessons in Mathematics, they answered that *"most of the time they used problem solving and exposition methods in teaching the subject."* However, they also stated that *"they utilized some other strategies that is best suited on the topic that will be discussed."*

In the follow-up question with the teacher-respondents, they were asked if it is really necessary to utilize various teaching methods in Mathematics. All of these teachers agreed that *"for them to be effective, they must know various teaching strategies and they must also know when to apply these strategies."* Further, they added that *"it is very important for Math teachers to be resourceful and flexible in presenting their lessons."*

Meanwhile, the student-respondents were asked to describe the teaching strategies of their respective teachers in teaching Math. These respondents answered that *"their Math teachers used strategy wherein they are encouraged to participate in the discussion."* Further, they added that though *"Math is difficult, their teachers always see to it that the class is not boring and they find ways and means to make lessons as simple as possible so that everyone in the class will understand the concepts."*

The Selected Factors in Teaching Mathematics

Teaching method enables students to focus their attention, organize their learning material for better understanding and help teachers to provide a suitable platform for strategic learning. There are a number of teaching methods with their various pros and cons. Therefore, the selection of a strategy is critical and must be done with utmost care by teachers in coordination with their students.

The perceptions of the teachers and their respective students as regards some factors in teaching Mathematics in terms of content and objectives, class environment, use of effective methods, class management, course objectives and examination system and preparation of lesson planning are presented in Tables 3 to 8.

Content and Objectives

In teaching Mathematics, the plans often focus on the subject contents and on a list of events to occur during the lesson; rarely do teachers give thought to a necessary change in the lesson on the basis of student thinking. By setting clear goals and objectives as the basis of the lesson, teachers can plan for and then assess student learning during instruction and make corrections to better meet the needs of students.

Table 3. Content and Objectives in Teaching Mathematics

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. discusses the subject matter in a very simple manner.	4.44	SA	4.30	SA
2. is well prepared when entering the classroom.	4.38	SA	4.25	SA
3. uses well prepared notes in presenting the lesson.	4.06	A	4.07	A
4. describes each and every aspect of the problem.	4.00	A	4.29	SA
5. adds more explanations when students ask for.	4.25	SA	4.66	SA
Overall Mean	4.23	SA	4.31	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Table 3 exhibits the Mathematics teaching methods in terms of content and objectives.

It can be noticed from the table that teachers strongly agree with the item "discusses the subject matter in a very simple manner" by an average of 4.44. On the other hand, the item "describes each and every aspect of the problem" obtained the lowest mean of 4.00 which is verbally described as "agree". The overall mean was recorded at 4.23 with a verbal description of "strongly agree".

A closer look at the table shows that students strongly agree with the item "adds more explanations when students ask for" with a mean of 4.66. Conversely, the statement "uses well prepared notes in presenting lessons" garnered the lowest mean of 4.06 which is verbally described as "agree". The overall mean was recorded at 4.31 with a verbal description of "strongly agree".

Results explains that math teachers discuss the subject's content and objectives in a very simple manner so the students can easily understand the topic. Also, students learn the subject effectively by asking more explanations.

Emphasized by Mulligan (2011), he explained that students need to develop both procedural and conceptual knowledge rather than relying on meaningless facts that have been learned in isolation. Mathematics education research focused on imagery and abstraction indicates that students who recognize the structure of Mathematical concepts and representations show higher achievement in mathematics than those who do not. An awareness of pattern and structure may influence the development of strong visualization skills, found related to high Mathematical achievement.

Class Environment

The classroom environment is the learning environment that teachers of Mathematics create in the classroom that will maximize instructional time, help students feel secure and supported, and motivate them to learn and

succeed. It includes the choices teachers make about rules and expectations, reward and discipline system, class procedures, seating arrangement, available tools and resources, and class culture/atmosphere.

Table 4. Environment in Mathematics Class

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. motivates students for developing their interest.	4.25	SA	4.21	SA
2. develops friendly atmosphere in the classroom.	4.19	A	4.32	SA
3. encourages students' participation during discussion	4.50	SA	4.45	SA
4. helps students when they face a problem.	4.38	SA	4.20	A
5. appreciates students' participation in the class room discussion	4.50	SA	4.64	SA
Overall Mean	4.36	SA	4.36	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Table 4 indicates the teaching methods in Mathematics terms of class environment.

Evidently, teachers strongly agree with all items indicated in the table including the computed overall mean of 4.36 except for item "develops friendly atmosphere in the classroom" which received the lowest computed weighted mean of 4.19 with a verbal description of "agree". Further examination of the table shows that items "encourages students' participation during discussion" and "appreciates students' participation in the classroom discussion" obtained the highest computed weighted mean of 4.50 correspondingly.

In addition, learners strongly agree with all the items indicated therein including the computed overall mean of 4.36 with exception to the item "helps students when they face a problem" which registered the lowest computed weighted mean of 4.20 with a verbal description of "agree". Also, table shows that item "appreciates students' participation in the classroom discussion" yielded the highest computed weighted mean of 4.64.

It is evident that both teachers and students chose to have a class environment that is appreciative of students' classroom participation. It is necessary to encourage students in voicing out their ideas and opinion.

In fact, study courses in academe require frequent discussions and collaborative activities. This is also the demand of lecture courses at times. If the whole class is not involved, and just a few students participate by volunteering answers, asking questions, or contributing to discussions, class sessions sometimes become a lost opportunity to enhance effective learning.

Teachers thought that their students' classroom participation can be observed by their communication and commitment. Further, they perceived their own strong role in classroom participation and reported its various dimensions like pedagogy, providing a healthy and friendly environment in the class, developing good rapport with students, encouraging to speak, enjoying jokes to reduce anxiety etc. for fostering students' participation. Students perceived teachers' traits, behavior and skills as factors which encourage them to participate actively.

Use of Effective Teaching Methods

The term teaching method refers to the general principles, pedagogy and management strategies used for classroom instruction. The Mathematics teachers' use of effective teaching method depends on what fits for them — their educational philosophy, classroom demographic, subject area(s) and school mission statement.

Table 5 portrays the teachers' instructional strategies in terms of effective teaching methods in Mathematics.

Results from the table revealed that teachers strongly agree with the item "provides examples from daily life" by an average of 4.50. On the other hand, the item "uses a process in which small groups assemble to communicate with each other" obtained the lowest mean of 4.06 which is verbally described as "agree". The overall mean was recorded at 4.31 with a verbal description of "strongly agree".

Table 5. Effective Teaching Methods in Mathematics

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. uses teaching method which is economical.	4.31	SA	4.53	SA
2. introduces new topics, showing relationships between theory and practice.	4.31	SA	4.36	SA
3. uses a process in which small groups assemble to communicate with each other.	4.06	A	4.71	SA
4. uses concrete materials to motivate students.	4.38	SA	4.75	SA
5. integrates new information with what is already known.	4.25	SA	4.45	SA
6. uses proper method for providing information.	4.19	A	4.25	SA
7. provides examples from daily life.	4.50	SA	4.35	SA
8. utilizes varieties of teaching strategies.	4.44	SA	4.50	SA
9. follows a logical method to solve the problem.	4.25	SA	4.36	SA
10. uses instruction which is activity centered.	4.44	SA	4.48	SA
Overall Mean	4.31	SA	4.47	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
1.81 – 2.60	Disagree (D)
3.41 – 4.20	Agree (A)
1.00 – 1.80	Strongly Disagree (SD)
2.61 – 3.40	Moderately Agree (MA)

A noteworthy result is that all items indicated in the learners' table including the overall mean of 4.47 received the highest verbal interpretation of "strongly agree". The results found further that item "uses concrete materials to motivate students" obtained the highest computed weighted mean of 4.75. While, item "uses proper method for providing information" got the lowest computed weighted mean of 4.25.

Data gathered shows that the most effective teaching method for the teachers is by providing examples applicable to daily lives. Moreover, as per the students, they learn effectively when motivated by concrete materials.

A large majority of teachers were using past experiences and new information together in explaining mathematical concepts. As a result, sizeable number of respondents were developing friendly atmosphere in the classes (Khan, Haider and Bukhari, 2016).

Set of teaching strategies served as mediating elements in the process of opening the mathematical task, motivating, inviting and guiding the students, from the beginning of the implementation of the task, with the intention to generate among them an excellent environment for the development of it. In addition, this set of teaching strategies has a wide variety of strategies such as: Use of alternating questions, promote interaction between students, analogies related to daily life, legitimize the answers presented by students, everyday expressions through mathematical reiterations, provide clues through the task, daily expressions through mathematical reiterations. In this way, under the considerations of the teachers, we can see that teaching method depends in large part on the teacher's methodology. However, this methodology should not be fixed, as a teacher can change other elements, in order to strengthen students´ learning; that is, the methodology must be renewable day by day with each of the experiences lived (Enriquez et al., 2018).

Hence, students also have played a role that is sensitive towards the use of concrete materials. With the establishment of the concept of the concrete material from the beginning, was an opportunity to every student to enjoy the beauty of math itself.

Class Management

Class management refers to the wide variety of skills and techniques that teachers of Mathematics use to keep students organized, orderly, focused, attentive, on task, and academically productive during a class. When classroom-management strategies are executed effectively, teachers minimize the behaviors that impede learning for both individual students and groups of students, while maximizing the behaviors that facilitate or enhance learning.

Table 6. Class Management in Mathematics

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. can control students in the classroom tactfully.	4.25	SA	4.19	A
2. engages students in practical activities.	4.19	A	4.20	A
3. can sustain classroom discipline.	4.50	SA	4.46	SA
4. gathers new information about the subject.	4.44	SA	4.50	SA
5. helps students in learning by doing.	4.25	SA	4.28	SA
6. trains students how to handle the odd situation.	4.19	A	4.60	SA
7. teaches students to be resourceful.	4.50	SA	4.53	SA
8. can manage large number of students.	4.38	SA	4.38	SA
9. ensures that the classroom runs smoothly.	4.56	SA	4.49	SA
10. builds harmonious relationship among students.	4.44	SA	4.30	SA
Overall Mean	4.37	SA	4.39	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Table 6 manifests teaching methods in mathematics in terms of class management. It can be seen on the table that teachers strongly agree with item "ensures that the classroom runs smoothly" which obtained the highest computed weighted mean of 4.56. However, items "engages students in practical activities" and "trains students how to handle the odd situation" garnered the lowest computed weighted mean of 4.19 with a verbal description of "agree" individually. The overall mean generated 4.37 which is verbally described as "strongly agree".

In contrary, learners strongly agree with the item "trains students how to handle the odd situation" which registered the highest mean of 4.60. Moreover, respondents agree to item "can control students in the classroom tactfully" which obtained the lowest computed weighted mean of 4.19. The overall mean generated 4.39 which is verbally describes as "strongly agree".

Results indicated that an effective classroom management for teachers is when instructors ensure a harmonious class set-up. In addition, students appreciate being trained in handling odd situation.

Thus, effective teachers should have excellent instructional strategies supported by methods of goal setting, instructional planning and classroom management. They know how to motivate, communicate and work effectively with students with different levels of skills and might come from culturally diverse backgrounds.

On the conducted interview with the teacher-respondents they were asked about their strategies to make classroom environment conducive for learning Mathematics. These teachers replied that *"they divide their class into groups*

with a leader who will see to it that their classroom is clean and organized before the class formally starts."

Course Objectives and Examination

A course objective specifies a behavior, skill, or action that a student can demonstrate if they have achieved mastery of the objective. As such, objectives need to be written in such a way that they are measurable by some sort of examination or assessment. Course objectives form the foundation of the class. Everything in the course should work together to ensure students master the course objectives.

Table 7. Course Objectives and Examination in Mathematics

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. articulates the knowledge and skills that students want to acquire.	4.44	SA	4.50	SA
2. ensures that students are meeting the learning objectives.	4.25	SA	4.22	SA
3. provides test questions in conjunction to the presented lessons.	4.19	A	4.16	A
4. prepares assessments appropriate to the level of the students.	4.50	SA	4.36	SA
5. accommodates and answers students' inquiry during tests.	4.38	SA	4.23	SA
Overall Mean	4.35	SA	4.29	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Table 7 presents teaching methods in mathematics in terms of course objectives and examination.

It is evident from the results that teachers strongly agree with all items indicated in the table including the computed overall mean of 4.35 except for item "provides test questions in conjunction to the presented lessons" which received the lowest computed weighted mean of 4.19 with a verbal description of "agree". Furthermore, the table shows that item "prepares assessments appropriate to the level of the students" obtained the highest computed weighted mean of 4.50.

Additionally, learners strongly agree with all the items indicated therein including the computed overall mean of 4.29 except the item "provides test questions in conjunction to the presented lessons" which registered the lowest computed weighted mean of 4.16 with a verbal description of "agree". A closer look on the table shows that item "articulates the knowledge and skills that students want to acquire" yielded the highest computed weighted mean of 4.50.

It is evident that the teachers and students agreed that they least consider test questions in conjunction to the presented lessons as instructional strategies. Yet, it is necessary for instructors to prepare assessments appropriate to students' level. Also, articulation of knowledge and skills that students want to acquire is crucial for students in learning.

Accordingly, Ortiz (2016), stated that teachers need to be flexible in their assessment of the students learning. Moreover, these teachers must provide many opportunities for discovery and exploration to enhance the students' capabilities in Mathematics.

Furthermore, Tambychik & Meerah, (2010), ascertained that students may utilize ways to learn mathematics concepts and skills that are rich with meaning and connections, and pre- and in-service teachers may implement teaching and assessment procedures to establish teaching and assessment environments.

Preparation of Lesson Planning

Good lesson planning is essential to the process of teaching and learning Mathematics. A teacher who is prepared is well on his/her way to a successful instructional experience. The development of interesting lessons takes a great deal of time and effort.

Table 8. Preparation of Lesson Planning in Mathematics

Item Statement *The Mathematics teacher…*	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. uses examples related to the topic.	4.56	SA	4.21	SA
2. presents the lesson according to the logical order.	4.31	SA	4.32	SA
3. focuses on individual differences of the students.	4.50	SA	4.45	SA
4. presents information in small units.	4.50	SA	4.20	A
5. gives a number of solutions to arrive at a conclusion.	4.44	SA	4.64	SA
Overall Mean	4.46	SA	4.36	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Table 8 reveals the teaching methods in Mathematics in terms of preparation of lesson planning.

A noteworthy result is that all items indicated in the table including the overall mean of 4.66 received the highest verbal interpretation of "strongly agree". The results unearthed further that item "the teacher of Mathematics uses examples related to the topic" obtained the highest computed weighted

mean of 4.56. On the other hand, item "the teacher of Mathematics presents the lesson according to the logical order" got the lowest computed weighted mean of 4.31.

Also, learners strongly agree with all the items indicated therein as well as the computed overall mean of 4.36 excepting the item "presents information in small units" which registered the lowest computed weighted mean of 4.20 with a verbal description of "agree". Results also explain that item "gives a number of solutions to arrive at a conclusion" yielded the highest computed weighted mean of 4.64.

In terms of lesson planning, teachers aimed to present the lesson using examples related to the topic. On the other side, it will be effective for students to grasp every lesson if the instructor gives several solutions to arrive at a conclusion.

Mathematics teacher can implement instruction in different ways. Most of the skills in Mathematics are used in courses of Math and student are threaded in areas of other content. Teacher should view the content material before teaching in order to determine that what type of strategy could be helpful for student to generalize the content easily. Learning strategies such as outlining, preparing notes, presenting examples and through questioning techniques students may succeed. It is an easy way of self-reflection that helps teachers in remembering information to teach students (Khan, Haider and Bukhari, 2016).

In this way, the socialization of the task becomes interesting as the students express their concerns, makes contributions, show other solutions or finally participate in the task. The socialization of the task is rich as the students participate in the development that is presented, because that is where they have the opportunity to ask questions and compare their answers. The socialization of the task was important for the students since the objective of developing the task among all was to observe, share, visualize and clear the doubts that several of them had had during the exploration of the task (Enriquez, et al., 2018).

Results from the conducted semi-structured interviews are in consonance with the quantitative findings of the study. When the teacher respondents were asked about their techniques and styles in preparing lessons in Math, they stated that first and foremost they consider the level of the students in preparing a lesson. They also added that their presentation should be suitable to the level of their students for them to easily understand the lesson.

The Summary of Respondents' Perceptions on Teachers Use of Teaching Method in Mathematics

Motivating students to be enthusiastically receptive is one of the most important aspects of instruction in Mathematics and a critical aspect of any curriculum. Effective teachers focus attention on the less interested students as well as the motivated ones.

Table 9. Selected Factors in Teaching Mathematics

Teachers Use of Instructional Strategies in Teaching Mathematics	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
content and objectives	4.23	SA	4.31	SA
class environment	4.36	SA	4.36	SA
use of effective methods	4.31	SA	4.47	SA
class management	4.37	SA	4.39	SA
course objectives and examination system	4.35	SA	4.29	SA
preparation of lesson planning	4.46	SA	4.36	SA
Overall Mean	4.35	SA	4.36	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Noted from Table 9 that learners and the teacher-respondents themselves strongly
agreed that they used effective teaching method in Mathematics in terms of content and objectives, class environment, use of effective methods, class management, course objectives and examination system, and preparation of lesson planning.

The findings only showed that teacher-respondents are fully aware that they need to engage in higher levels of mathematics to improve their content knowledge and to explore and reflect on their teaching strategies.

In the same vein, Swanson (2011), affirmed that using a combination of direct instruction and strategy instruction has a great positive effect than other methods alone. Further, he recommended that teachers in Mathematics should use both the teaching and instructional strategies in every lesson to make most of the approaches.

In the conducted interview with the student respondents, they were asked about the effectiveness is their teacher in teaching Math lessons. These students replied that *"their teachers are very effective in teaching the subject." "They always come to class prepared, confident and showed mastery in all the topics in Math."* Moreover, they added that *"their teachers in Mathematics used variety of strategies to make the lessons interesting and easier to understand."*

The Respondents' School Climate

Anyone who spends time in schools quickly discovers how one school can feel different from other schools. School climate is a general term that refers to the feel, atmosphere, tone, ideology, or milieu of a school. Just as individuals have personalities, so too do schools; a school climate may be thought of as the personality of a school.

The respondents' assessments of the climate in their respective schools in terms of safety (safety rules and norms, teaching and learning (support for learning, social and civic learning), interpersonal relationships (respect for

diversity, social support / adults, social support / students), school environment (school connectedness / engagement, physical surroundings), and social media are presented in Tables 10 to 18.

Safety

School safety refers to the provision of a safe environment in schools where measures are taken to protect the students from bullying, harassment, violence and substance usage. There are certain measures that are taken to protect the teachers from harassment or assault. School safety can also mean safety in case of any disaster.

Safety Rules and Norms

Schools have policies for several reasons. Policies establish rules and regulations to guide acceptable behavior and ensure that the school environment is safe for students, teachers and school staff. School policies also help create a productive learning environment.

The respondents' school climate in terms of safety as to rules and norms are exhibited in Table 10.

Clarified from the table that teachers strongly agree with the item "In my school, there are clear rules about not hurting other people (for example, hitting, pushing, tripping, etc.)" by an average of 4.50. On the other hand, the item "Adults in my school stop students if they see them name-calling, teasing, and making fun of others" obtained the lowest mean of 4.00 with a verbal description of "agree". The overall mean was recorded at 4.23 with a verbal description of "strongly agree".

In addition, table shows that students strongly agree with the item "In my school, there are clear rules against name-calling, teasing, and making fun of others." with a mean of 4.50. Conversely, "Adults in my school stop students if they see them name-calling, teasing, and making fun of others" garnered the lowest mean of 3.49 with a verbal description of "average". The overall mean was recorded at 4.15 with a verbal description of "agree".

Table 10. Respondents' School Climate in terms of Safety as to Rules and Norms

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. In my school, there are clear rules about not hurting other people (for example, hitting, pushing, tripping, etc.).	4.50	SA	4.36	SA
2. Adults in my school are fair about making sure that all students follow the rules.	4.13	A	4.05	A
3. Adults in my school will stop students if they see them hurting each other (for example, pushing, slapping, beating each other up, etc.).	4.25	SA	4.35	SA
4. In my school, there are clear rules against name-calling, teasing, and making fun of others.	4.25	SA	4.50	SA
5. Adults in my school stop students if they see them name-calling, teasing, and making fun of others.	4.00	A	3.49	A
Overall Mean	4.23	SA	4.15	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Results indicated that safety of school is implemented through rules about not hurting other people. Also, students have practiced rules against name-calling, teasing and making fun of others. However, both teachers and students have observed minimal incidence of adults stopping students if they see them doing unlikely behavior.

A study of Kutsyuruba, Klinger and Hussain, (2015), implies that school climate, safety and well-being of students are important antecedents of academic achievement. However, school members do not necessarily experience school climate in the same way; rather, their subjective perceptions of the environment and personal characteristics influence individual outcomes and behaviors. Therefore, a closer look at the relationship between school climate, safety, well-being of students and student learning is needed.

A sustainable, positive school climate fosters youth development and learning necessary for a productive, contributive, and satisfying life in a democratic society. This climate includes norms, values, and expectations that support people feeling socially, emotionally and physically safe. People are engaged and respected. Students, families and educators work together to develop, live, and contribute to a shared school vision. Educators model and nurture an attitude that emphasizes the benefits of, and satisfaction from, learning. Each person contributes to the operations of the school as well as the care of the physical environment.

Furthermore, a sustainable, positive school climate fosters youth development and learning necessary for a productive, contributive, and satisfying life in a democratic society. This climate includes norms, values, and expectations that support people feeling socially, emotionally and physically safe. People are engaged and respected. Students, families and educators work together to develop, live, and contribute to a shared school vision. Educators model and nurture an attitude that emphasizes the benefits of, and satisfaction from learning. Each person contributes to the operations of the school as well as the care of the physical environment (Thapa, et al., 2013).

Teaching and Learning

Teaching and learning is a process that includes many variables. These variables
interact as learners work toward their goals and incorporate new knowledge, behaviors,
and skills that add to their range of learning experiences.

Support for Learning

Support for learning is another critical component of an effective learning environment. It focuses on what the teacher can or should do to help learners beyond the formal delivery of content, or skills development.

The respondents' school climate in terms of teaching and learning as to support for learning are indicated in Table 11.

Teachers' responses show that items "My teachers help me try out my own ideas" and "Teachers give me many different ways to show them what I know (for example, projects, tests, collages, etc.)" attained the highest computed weighted mean of 4.50 correspondingly which are verbally described as "strongly agree". However, items "My teachers let me know when I do a good job" and "My teachers let me know how I am doing in school" registered the lowest computed weighted mean of 4.13 respectively with a verbal description of "agree". The overall computed mean was recorded at 4.28 with a verbal description of "strongly agree".

On the contrary, it was found out that that there was a contradicting perception between teachers and students as to school's climate in terms of teaching and learning. Teachers do not fully support letting students know how they are doing. Instead, instructors help learners try out own ideas and provide activities where the students can showcase one's abilities. But, as to students, it is good to know when they do a good job. It is the least concern to know how to learn from one's mistakes.

According to Maxwell, et al. (2017), while studying the climate-achievement link from the student perspective is illustrative, the staff perspective is also relevant. Measuring staff perspectives of school climate is important for several reasons. First, discrepancies have been found between students' and teachers' perceptions. Teachers' ratings are more sensitive to classroom level factors and students are more sensitive to school-level factors.

Table 11. Respondents' School Climate in terms of Teaching and Learning as to Support for Learning

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. My teachers help me to try out my own ideas.	4.50	SA	4.39	SA
2. My teachers let me know when I do a good job.	4.13	A	4.53	SA
3. If I do not understand something in class, I feel comfortable letting my teacher know.	4.31	SA	4.49	SA
4. Teachers give me many different ways to show them what I know (for example, projects, tests, collages, etc.).	4.50	SA	4.45	SA
5. Teachers help me to do more than I think I can.	4.19	A	4.43	SA
6. My teachers let me know how I am doing in school.	4.13	A	4.25	SA
7. My teachers show me how to learn from my mistakes.	4.25	SA	4.22	SA
8. My teachers help me figure out how I learn best.	4.25	SA	4.30	SA
Overall Mean	4.28	SA	4.38	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Teachers also rate teacher-student relations more positively than students do. Second, and importantly, teachers have the largest impact on student learning out of all school reform initiatives. Therefore, measuring staff perceptions might expose areas for reform and intervention.

Social and Civic Learning

Social learning is defined as learning through the observation of other people's behaviors. It is a process of social change in which students learn from each other in ways that can benefit wider social-ecological systems. Meanwhile, civic learning is a process through which students develop the knowledge, skills, and commitments to interact effectively with community members to address shared problems.

The respondents' school climate in terms of teaching and learning as to social and civic learning are presented in Table 12.

Represented from the table that teachers strongly agree with the items "In my school, we talk about how our actions make others feel", "In my school, we learn how to get our work done without being distracted" and "Students in my school believe that they should try to make the world a better place" by an average of 4.50 respectively. However, the item "In my school, adults teach me how to show feelings in proper ways" got the lowest mean score of 4.13 with a verbal description of "agree". The overall mean was recorded at 4.37 with a verbal description of "strongly agree".

Moreover, table shows that students strongly agree with the item "Students in my school believe that they should try to make the world a better place". with a mean score of 4.61. Conversely, "In my school, we talk about ways to be a good person". garnered the lowest mean of 4.12 with a verbal description of "agree". The overall mean was recorded at 4.40 with a verbal description of "strongly agree".

The data gathered revealed that teachers and students' top priority is to build to learners that they should try to make the world a better place.

As a result, there is a compelling body of research that underscores the importance of school climate. Positive school climate promotes student learning, academic achievement, school success, and healthy development.

Table 12. Respondents' School Climate in terms of Teaching and Learning as to Social and Civic Learning

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. In my school, adults teach me how to show feelings in proper ways.	4.13	A	4.26	SA
2. In my school, we learn ways to solve arguments so that everyone can be happy with the result.	4.31	SA	4.47	SA
3. In my school, we talk about how our actions make others feel.	4.50	SA	4.51	SA
4. In my school, we talk about ways to be a good person.	4.19	A	4.12	A
5. In my school, we talk about what is right and what is wrong.	4.44	SA	4.36	SA
6. In my school, we learn how to get our work done without being distracted.	4.50	SA	4.25	SA
7. Students in my school believe that they should try to make the world a better place.	4.50	SA	4.61	SA
8. In my school, we talk about why it is important to understand our feelings and the feelings of others.	4.38	SA	4.59	SA
Overall Mean	4.37	SA	4.40	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

In the same way, it also promotes effective risk prevention, positive youth development, and increased teacher retention. Furthermore a growing number of major educational reform leaders have underscored the fundamental and profound importance of school climate and how students, parents, school personnel, and community leaders work together to support positive youth development and student learning (Cohen et al., 2009).

Thapa, et al. (2013), discussed that there seems to be an abundant literature on school climate from different parts of the world that document a positive school climate: (a) having a powerful influence on the motivation to learn; (b) mitigating the negative impact of the socioeconomic context on academic success; (c) contributing to less aggression and violence, less harassment, and less sexual harassment; and (d) acting as a protective factor for the learning and positive life development of young people. In addition to these areas, studies around the world also indicate that quality of the school climate contributes to academic outcomes as well as the personal development and well-being of pupils.

Interpersonal Relationships

From the first day of kindergarten to the last day of high school, teachers play a critical role in helping students develop interpersonal relationships. Whether it is resolving a conflict or promoting cooperation, there are endless opportunities to teach students how to interact with those around them.

Respect for Diversity

The concept of diversity encompasses acceptance and respect. It means understanding that each individual is unique and has differences is important. These can be along the dimensions of race, ethnicity, gender, sexual orientation, socio-economic status, age, physical abilities, religious beliefs, political beliefs, or other ideologies.

The respondents' school climate in terms of interpersonal relationships as to respect for diversity are exhibited in Table 13.

Noted from the table that teachers strongly agree with the item "I like working with someone who is different than me (for example, where they come from, what they look like, if they are a boy or girl, etc.)" as evidenced by an average of 4.50. On the other hand, items "Students in my school respect differences in other students (for example, where they come from, what they look like, if they are a boy or girl, etc.)" and "Adults in my school respect differences in students (for example, where they come from, what they look like, if they are a boy or girl, etc.)" garnered the lowest average of 4.19 similarly with a verbal description of "agree". The overall mean was recorded at 4.34 with a verbal description of "strongly agree".

Table 13. Respondents' School Climate in terms of Interpersonal
Relationships as to Respect for Diversity

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. Students in my school respect differences in other students (for example, where they come from, what they look like, if they are a boy or girl, etc.).	4.19	A	4.37	SA
2. My school welcomes and accepts people from many different backgrounds.	4.44	SA	4.50	SA
3. I like working with someone who is different from me (for example, where they come from, what they look like, if they are a boy or girl, etc.).	4.50	SA	4.36	SA
4. Students in my school respect differences in adults (for example, where they come from, what they look like, if they are a man or woman, etc.).	4.31	SA	4.28	SA
5. Adults in my school respect differences in students (for example, where they come from, what they look like, if they are a boy or girl, etc.).	4.19	A	4.31	SA
6. Adults in my school respect differences in other adults (for example, where they come from, what they look like, if they are a man or woman, etc.).	4.44	SA	4.56	SA
Overall Mean	4.34	SA	4.40	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Also, the table shows substantial results that students strongly agree with all the items stated including the overall mean of 4.40 which received the highest verbal interpretation of "strongly agree". Specifically, the item "Adults in my school respect differences in other adults (for example, where they come from, what they look like, if they are a man or woman, etc.)" obtained the highest mean of 4.66. Conversely, "Students in my school respect differences in adults (for example, where they come from, what they look like, if they are a man or woman, etc.)" garnered the lowest mean of 4.28.

Results implies that respect for diversity was practiced by teachers as evidenced by working with colleagues of different origins. Also, students respect differences as they socialize, most specially with adults.

Cohen, et al. (2009), incorporated parent and community involvement and student engagement here. Also embedded within is mutual respect for individual differences, specifically respect for diversity. Thus, this study views relationships to include the sub-dimensions teacher–student relationships, student–student relationships, and respect for diversity.

Social Support / Adults

Social support refers to the social and psychological support that students receive or perceive in their environment such as respect, care, and help.

The respondents' school climate in terms of interpersonal relationships as to social support / adults are revealed in Table 14.

Examined from the table that teachers strongly agree with all the items indicated plus the overall mean registered at 4.39 with the exception of the item "Adults in my school like to get to know students" which obtained the lowest computed weighted mean of 4.19 and verbally described as "agree". A closer look on the table shows that item "Adults in my school are good examples of how to behave" obtained the highest mean of 4.56.

Table 14. Respondents' School Climate in terms of Interpersonal Relationships as to Social Support / Adults

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. Adults in my school are good examples of how to behave well.	4.56	SA	4.33	SA
2. Adults in my school seem to get along with each other.	4.50	SA	4.47	SA
3. Teachers in my school expect all students to succeed.	4.44	SA	4.52	SA
4. Adults in my school help each other.	4.38	SA	4.61	SA
5. In my school, students trust an adult to help them when they have a problem.	4.38	SA	4.52	SA
6. Adults in my school listen to what students have to say.	4.31	SA	4.56	SA
7. Adults in my school like to get to know students.	4.19	A	4.57	SA
Overall Mean	4.39	SA	4.51	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Also, the table shows a significant note that students strongly agree with all the items stated as well as the overall mean of 4.51. Further examination of the table shows that item "Adults in my school help each other" garnered the highest mean of 4.61. Conversely, "Adults in my school are good examples of how to behave well" garnered the lowest mean of 4.33.

Results mean that adults in the school show a good interpersonal relationship

Good behavior was also manifested by adults in dealing with other people and with the

students.

Therefore, the organizational climate in a school is also concerned with positive interpersonal dynamics between teachers and the principal as well as among teachers (Kutsyuruba, Klinger and Hussain, 2015).

Students work hard and respect others who do well academically. Principals have high expectations for teachers and go out of their way to help teachers in a friendly and supportive way.

Social Support / Students

Social support is an important element in students' life. Social support is one of the factors that might influence students' academic achievement.

The respondents' school climate in terms of interpersonal relationships as to social support / students are exhibited in Table 15.

Table 15. Respondents' School Climate in terms of Interpersonal Relationships as to Social Support / Students

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. Students have friends who help them if they have questions about Mathematics.	4.44	SA	4.61	SA
2. Students have friends they trust and talk to when they have problems in Mathematics.	4.38	SA	4.52	SA
3. Students work well with other students in Math class even if they are not friends.	4.38	SA	4.24	SA
4. Students teach each other during break time.	4.31	SA	4.55	SA
5. Students try to make new students feel welcome in the school.	4.19	A	4.51	SA
Overall Mean	4.34	SA	4.49	SA

Legend:

Scale	Verbal Description
4.21 – 5.0	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

It can be noticed from the table that teachers strongly agree with all the items indicated as well as with the overall mean as evidenced by 4.34 with the exception of the item "Students try to make new students feel welcome in the school" which registered at the lowest computed weighted mean of 4.19 and verbally described as "agree". Specifically, results revealed that the highest computed weighted mean falls to the item "Students have friends who help them if they have questions about Mathematics" by an average of 4.44.

Another worth mentioning results is that students strongly agree with all the items specified including the overall mean of 4.49. The item "Students have friends who help them if they have questions about Mathematics" obtained the highest computed weighted mean of 4.61. Contrarywise, "Students work well with other students in Math class even if they are not friends" garnered the lowest mean of 4.24.

Results revealed that students exhibit a friendly environment with schoolmates by sharing knowledge and skills in understanding Mathematics. This was observed by teachers and learners.

Along these lines, Reynolds, et al. (2017), found that the relationship between students' school climate perceptions and students' numeracy and writing scores was fully mediated by students' socialization.

School Environment

A school environment is broadly characterized by its facilities, classrooms, school-based health supports, and disciplinary policies and practices. It sets the stage for the external factors that affect students.

School Connectedness / Engagement

School connectedness is the belief held by students that adults and peers in the school care about their learning as well as about them as individuals. Students are more likely to engage in healthy behaviors and succeed academically when they feel connected to school.

The respondents' school climate in terms of school environment as to school connectedness/engagement are presented in Table 16.

It can be examined from the table that all items indicated therein including the computed overall mean of 4.39 and 4.48 received the highest verbal description of "strongly agree" respectively.

Table 16. Respondents' School Climate in terms of School Environmen as to School Connectedness / Engagement

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. My school tries to get students to join Math school activities	4.38	SA	4.61	SA
2. My school tries to get my family to be part of school events.	4.31	SA	4.52	SA
3. I feel like I belong at my school.	4.28	SA	4.43	SA
4. My school tries to let my family know about what's going on in school.	4.38	SA	4.55	SA
5. I feel good about what I do in school.	4.56	SA	4.51	SA
6. My family feels comfortable talking to my teachers.	4.25	SA	4.24	SA
7. My family feels welcome at my school.	4.56	SA	4.53	SA
Overall Mean	4.39	SA	4.48	SA

Legend:

Scale	Verbal Description
4.21 – 5.0	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Further review of the table shows that items "I feel good about what I do in school" and "My family feels welcome at my school" obtained the highest computed weighted mean of 4.56 accordingly based from teachers' responses. Also, students' responses indicated that item "My school tries to get students to join Math school activities" garnered the highest computed mean of 4.61

On the other hand, item "My family feels comfortable talking to my teache registered the lowest computed weighted mean of 4.25 and 4.24 for both teachers and learners correspondingly.

It was shown from the data that the school practices a friendly-environment wherein stakeholders felt welcome and good about it. This type of environment encourages every student to study well.

Since, students' psychological identification with a positive school climate emerged as a powerful variable influencing students' academic performance, interventions could foster and support students' feeling of closeness to the school (Maxwell, 2017).

Physical Surroundings

Physical environment refers to the level of upkeep, ambient noise, lighting, indoor air quality and/or thermal comfort of the school's physical building and its location within the community.

The respondents' school climate in terms of school environment as to physical surroundings are presented in Table 17.

Results from the table revealed that teachers strongly agree with the items "We have enough space and equipment for after-school activities at my school" and "We have a very functional library in our school" which registered the highest computed weighted mean of 4.56 respectively. In contrary, the item "My school has working computers and other electronic devices available to students" obtained the lowest mean of 4.19 which is verbally described as "agree" The overall mean was recorded at 4.39 with a verbal description of "strongly agree".

Furthermore, learners strongly agree with item "We have enough space and equipment for after-school activities at my school" which garnered the highest computed weighted mean of 4.66. On the other hand, item "My school has working computers and other electronic devices available to students" registered the lowest computed weighted mean of 4.07. The overall mean resulted at 4.37 with a verbal description of "strongly agree".

Table 17. Respondents' School Climate in terms of School Environment
as to Physical Surroundings

Item Statement	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
1. My school building is clean.	4.31	SA	4.25	SA
2. My school has working computers and other electronic devices available to students.	4.19	A	4.07	A
3. My school looks good (for example, enough space, student artwork displayed, etc.).	4.38	SA	4.29	SA
4. We have enough space and equipment for after-school activities at my school.	4.56	SA	4.66	SA
5. We have enough supplies in my school (for example, books, other Math references, calculators, etc.).	4.50	SA	4.52	SA
6. My school building is kept in good condition (for example, when something is broken, it gets fixed).	4.25	SA	4.62	SA
7. We have a very functional library in our school.	4.56	SA	4.19	A
Overall Mean	4.39	SA	4.37	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Data gathered imply that enough facilities were provided well for after-school activities. However, computer units and other electronic devices are insufficient to address the needs of the students. This means that physical surroundings need to be improved to provide a quality education.

Students' school experiences might affect their academic performance in the following way. If the school climate is positive and supportive, and this, in turn, facilitates the student to identify with the school as a salient group, then the student is more likely to reflect and embed the school values and norms, focusing on learning and achievement, with their behavior (Reynolds, et al., 2017).

Social Media

Social media is computer-based technology that facilitates the sharing of ideas,
thoughts, and information through the building of virtual networks and communities. By design, social media is internet-based and gives users quick electronic communication of content.

The respondents' school climate in terms of school environment as to social media are revealed in Table 18.

Apparently, all items indicated in the table including the computed overall mean of 4.45 and 4.47 registered the highest verbal interpretation of "strongly agree" individually. Further examination of the table shows that items "Students in our school stop other students from saying bad things to others online or through the phone" and "In this school, students ask an adult for help if someone says bad things online or through the phone" obtained the highest computed weighted mean of 4.56 respectively based from teachers' responses. As to learners' responses, item "In this school, students ask an adult for help if someone says bad things online or through the phone" registered the highest computed weighted mean of 4.68.

Meanwhile, items "Most students in our school use the internet or the phone in ways that make each other feel better" and "I use the internet or the phone without being teased or made fun of by other students" received the lowest computed weighted mean of 4.25 and 4.23 for teachers and learners respectively. This indicates that students are still being reminded of decorum in using social media accounts.

However, the growing trend of cyber bullying penetrates the home via computers and cellular phones. School bullying and harassment have moved to the virtual school, which is comprised of the social media that individual student or groups use to harass their peers (Campbell, 2005)

Table 18. Respondents' School Climate in terms of School Environment as to Social Media

Item Statement	

	Mean	VD	Mean	VD
1. Students in our school stop other students from saying bad things to others online or through the phone.	4.56	SA	4.44	SA
2. Most students in our school do not share personal information online or through the phone (for e.g., home address, last name, etc.)	4.50	SA	4.62	SA
3. Most students in our school use the internet or the phone in ways that make each other feel better.	4.25	SA	4.44	SA
4. In this school, students ask an adult for help if someone says bad things online or through the phone.	4.56	SA	4.68	SA
5. I use the internet or the phone without being teased or made fun of by other students.	4.50	SA	4.23	SA
6. In my school, social sites are used for educational purposes.	4.31	SA	4.38	SA
Overall Mean	4.45	SA	4.47	SA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Additionally, bullying affects student engagement and lowers students' commitment to schoolwork (Thapa, 2013).

Therefore, one possible solution for this dilemma is to keep the learners in touch
with that educator, and promote reflection and reinforcement of environmental messages, through the use of social media (Warner, Eames and Irving, 2014).

The Summary of Respondents' Perceptions on School Climate

The school climate construct is complex and multi-dimensional. It has been described as the unwritten personality and atmosphere of a school, including its norms, values, and expectations. Further, it has been described as the "quality and character of school life". Importantly, rather than concerning administrative or physical attributes of the school, school climate research hones in on the psychosocial school atmosphere, and the inter-group interactions that affect student learning and school functioning.

Seen from Table 19 that as a whole, teacher and learner respondents strongly agreed that they had a pleasant school climate. Further, these respondents feel the climate to be friendly and welcoming, inviting and supportive (conducive/open), and even safe (conducive to learning).

These results revealed that respondents had a conducive school climate where people are respected and engaged. Learners, families and educators work together, live and contribute to a shared vision. Each person contributes to the operations of the school as well as the care of the school environment. Teachers model and nurture an attitude that emphasizes the benefit from learning.

Accordingly, Bear, et al. (2014), opined that schools perceived as being positive, safe and with nurturing environment that focus on students' learning perform better in examinations regardless of available technology or teacher training. This means that the learning environment, culture and climate created by the school may foster or hinder learning.

On the conducted interview with the teacher-respondents, they were asked to describe their respective school climate. These teachers replied that *"it is common to public secondary schools to have classes with a lot of students that is beyond the capacity of each classroom."* They also said that *"in spite of their big class problems, they are proud to say that their schools are clean, safe, and there are harmonious relationships between teachers, students and principals."*

Table 19. Summary of Respondents' Perceptions on School Climate

School Climate	Teacher (N=16)		Learner (N=612)	
	Mean	VD	Mean	VD
safety rules and norms	4.23	SA	4.15	A
support for learning	4.28	SA	4.38	SA
social and civic learning	4.37	SA	4.40	SA
respect for diversity	4.34	SA	4.40	SA
social support / adults	4.39	SA	4.51	SA
social support / students	4.34	SA	4.49	SA
school connectedness/ engagement	4.39	SA	4.48	SA
physical surroundings	4.39	SA	4.37	SA
social media	4.45	SA	4.47	SA
Overall Mean	4.35	SA	4.41	SA

Legend:

Scale	Verbal Description
4.21 – 5.0	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Meanwhile, when the student-respondents were asked to describe their school
environment, they answered that *"though every classroom in their school is very populated they still felt safe."* Additionally, they said that *"their school is clean and discipline among students is manageable."*

The Students' Affective Domain in Mathematics Learning

In the Mathematics classroom, the affective domain is concerned with students' perception of mathematics, their feelings toward solving problems, and their attitudes about school and education in general. Personal development, self-management, and the ability to focus are key areas. Apart from cognitive outcomes, teachers stress attitude as the most common affective outcome.

The assessments of the students as regards their beliefs in Mathematics in terms of Mathematics beliefs (time, steps, understanding, usefulness), attitude towards Mathematics (interest, preference for understanding, competence, textbook, classroom learning and outside-class learning), and emotions in Mathematics (class related emotions, learning related emotions, test emotions) are summarized in Tables 20 to 31.

Mathematics Beliefs

Belief in Mathematics is the summary of four beliefs, namely beliefs on Mathematics as discipline, beliefs on learning Mathematics, beliefs on teaching Mathematics, and beliefs on self in context where the learning Mathematics occurs. Beliefs in Mathematical is a view or conception of Mathematics naturalness, model or view of teaching Mathematics naturalness, and model or view of learning Mathematics process**.**

Time

Time pressure increases task difficulty, and that increased difficulty increases goal commitment, providing the goal is still perceived to be achievable. More commitment typically results in more effort being applied to a task, and through this, increased performance may occur.

Table 20 illustrates students' affective domain in learning Mathematics in terms of belief in Mathematics as to time.

Reflected from the table that item "Solving Math problems may take a long time" got the highest computed weighted mean of 3.90 with a verbal description of "agree". On the other hand, item "If a math problem can't be solved in a few minutes, it probably can't be solved" received the lowest computed weighted mean of 3.02 with a verbal interpretation of "moderately agree". The overall mean was recorded at 3.59 which is verbally interpreted as "agree".

Table 20. Students' Affective Domain in Learning Mathematicsin terms of Mathematics Beliefs as to Time

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. Understanding mathematics sometimes takes a long time.	245	134	155	59	19	3.86	A
2. Solving math problems may take a long time.	186	199	215	6	6	3.90	A
3. Given enough time, hard math problems can be solved.	248	222	129	13	0	4.15	A
4. If a math problem can't be solved in a few minutes, it probably can't be solved.	45	149	238	136	44	3.02	MA
5. Understanding mathematics should not take a long time.	36	176	249	149	2	3.16	MA
6. Math problems should not take a long time to figure out.	56	287	158	98	13	3.45	A
Overall Mean						3.59	A

Legend:

Scale	Verbal Description
2.61 – 3.40	Moderately Agree (MA)
4.21 – 5.00	Strongly Agree (SA)
1.81 – 2.60	Disagree (D)
3.41 – 4.20	Agree (A)
1.00 – 1.80	Strongly Disagree (SD)

Data show that the subject Mathematics needs time to be learned by students. There is always a solution to every problem. It may not come instantly, but there are
various ways on how to compute for it.

Seeing success as dependent on effort and dedication means that students tackle tasks in Mathematics with a positive self-concept, since if they think they succeeded because they made an effort or that they failed because they did not devote much time to the subject, in no way will this lessen their concept of themselves (Ignacio, 2016).

Steps

In solving mathematical problems, there are certain steps that should be followed. Each step in the problem-solving process employs skills and methods that contribute to the overall effectiveness of influencing change and determine the level of problem complexity that can be addressed. Humans learn how to solve simple problems from a very early age (learning to eat, make coordinated movements and communicate) – and as a person goes through life problem-solving skills are refined, matured and become more sophisticated (enabling them to solve more difficult problems).

Table 21 depicts students' affective domain in learning Mathematics in terms of Mathematics belief as to steps.

It is evident from the table that item "One must use step by step procedures to solve Math problems" got the highest computed weighted mean of 4.58 with a verbal description of "strongly agree". In contrary, item "Math problems can be solved without remembering formulas" received the lowest computed weighted mean of 2.08 with a verbal interpretation of "disagree". The overall mean was obtained at 3.40 which is verbally interpreted as "moderately agree".

Formula is necessary in solving for the correct answer. It is a step-by-step procedure needed to do in order to find what has been asked. Students may have a hard time getting the right one if formulas were not remembered.

In the same sense, Ignacio, et al., (2010), reiterated that success is dependent on
effort and dedication which means that pupils tackle tasks in Mathematics with a positive self-concept. If the students think they succeeded because they made an effort or they failed because they did not devote much time to the subject, in no way will this lessen their concept of themselves.

Table 21. Students' Affective Domain in Learning Mathematicsin terms of Beliefs in Mathematics as to Steps

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. Math problems can be solved without following a predetermined sequence of steps.	22	35	145	256	154	2.21	D
2. Math problems can be solved without remembering formulas.	35	15	150	177	235	2.08	D
3. Math problems can be solved with logic and reason instead of learned rules and procedures.	47	145	187	135	98	2.85	MA
4. Learning to do math problems is mostly a matter of memorizing the right steps to follow.	245	266	58	25	18	4.14	A
5. To solve math problems, students have to be taught the right procedures.	358	234	15	3	2	4.54	SA
6. One must use step by step procedures to solve math problems.	398	179	24	11	0	4.58	SA
Overall Mean						3.40	MA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Understanding

Problem-solving allows students to develop understanding and explain the processes used to arrive at solutions, rather than remembering and applying a set of procedures.

Table 22 summarizes students' affective domain in learning Mathematics in terms of beliefs in Mathematics as to understanding.

Noticed from the results that respondents strongly agree with the item "In addition to getting a right answer in Mathematics, it is important to understand why the answer is correct" which yielded the highest average of 4.58. However, students moderately agree to the item "Getting a right answer in math is more important than understanding why the answer works" with the lowest average of 2.94. The overall mean was garnered at 3.79 which is verbally described as "agree".

Table 22. Students' Affective Domain in Learning Mathematics in terms of Beliefs in Mathematics as to Understanding

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. Investigating why a solution to a Math problem works is as important as getting the correct answer.	245	266	58	25	18	4.14	A
2. A person who doesn't understand why an answer to a Math problem is correct hasn't really solved the problem.	358	234	15	3	2	4.54	SA
3. In addition to getting a right answer in Mathematics, it is important to understand why the answer is correct.	398	179	24	11	0	4.58	SA
4. It's not important to understand why a Mathematical procedure works as long as it gives a correct answer.	35	135	276	144	22	3.03	MA
5. Getting a right answer in Math is more important than understanding why the answer works.	36	145	233	143	55	2.94	MA
6. It doesn't really matter if you understand a Math problem if you can get the right answer.	147	133	245	67	20	3.52	A
Overall Mean						3.79	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

This simply implies that students give more importance as to how a final answer in Mathematical problem can be solved rather than knowing the correct answer itself. Further, they looked for the reasons, steps and procedures on how they arrived at that answer.

In the study of Ignacio, et al., (2010), they explain that the students in general state that being good at Mathematics (getting good marks, having a good attitude) does not bring any greater social prestige from the rest of their classmates. Nonetheless, the desire to master the subject and the expectations of success in it were patent, since they considered that unless they understand and can do Mathematics they will not assimilate and understand other subjects that are related to it.

Usefulness

The importance of Mathematics is not only crucial for scientists or engineers, but it helps develop skills such as analyzing data, seeking evidence, recognizing patterns every day. It gives a chance to people to have a better way of understanding or interpreting information.

Table 23 summarizes students' affective domain in learning Mathematics in terms of beliefs in Mathematics as to usefulness.

Results suggest that respondents strongly agree with the items "I study Mathematics because I know how useful it is" and "Mathematics is a worthwhile and necessary subject" with the highest average of 4.58 respectively. On the other hand, students moderately agree to the item "Mathematics will be important to me, in my life's work" with the lowest average of 3.37. The overall mean was garnered at 3.85 which is verbally described as "agree".

Results indicated that students understand the necessity of learning Mathematics.

Learning Mathematics has become a necessity for an individual's full development in today's complex society. Technological advances and the growing importance of the means of communication make it necessary for people to adapt to the new situations that are arising out of social change (Puteh, 2016).

Table 23. Students' Affective Domain in Learning Mathematicsin terms of Beliefs in Mathematics as to Usefulness

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I study Mathematics because I know how useful it is.	398	179	24	11	0	4.58	SA
2. Knowing Mathematics will help me earn a living	147	133	245	67	20	3.52	A
3. Mathematics is a worthwhile and necessary subject	398	179	24	11	0	4.58	SA
4. Mathematics will be important to me, in my life's work.	123	128	254	69	38	3.37	MA
5. Mathematics is very relevant to my life.	134	156	237	59	26	3.51	A
6. Learning Mathematics is very useful in college.	147	133	245	67	20	3.52	A
Overall Mean						3.85	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)

3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Attitude Towards Mathematics

Attitude toward Mathematics is the student's organized predisposition to think, feel, perceive, and behave toward Mathematics; is an aggregated measure of "a liking or disliking of Mathematics, a tendency to engage in or avoid mathematical activities, a belief that one is good or bad at Mathematics, and a belief that Mathematics is useful or useless".

Interest

Interest is often thought of as a process that contributes to learning and achievement. That is, being interested in a topic is a mental resource that enhances learning, which then leads to better performance and achievement.

Table 24 presents the students' affective domain in learning Mathematics in terms of attitude towards Mathematics as to interest.

Gleaned from the table that item "I love solving Mathematical problems" registered the highest computed weighted mean of 4.58 which is verbally described as "strongly agree". Meanwhile, the item "I solve Math problems even at home" received the lowest computed weighted mean of 3.25 which is verbally interpreted as "moderately agree". The overall mean was recorded at 3.59 with a verbal description of "agree".

Table 24. Students' Affective Domain in Learning Mathematics in terms of Attitude Towards Mathematics as to Interest

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I love solving mathematical problems.	398	179	24	11	0	4.58	SA
2. I am very interested in attending classes in Math.	123	128	254	80	27	3.39	MA
3. I am interested in mathematical calculations.	136	222	145	100	9	3.61	A
4. I solve mathematical problems even at home.	80	146	247	127	12	3.25	MA
5. I enjoy solving mathematical problems.	69	129	246	147	21	3.13	A
Overall Mean						3.59	A

Legend:

Scale	Verbal Description
2.61 – 3.40	Moderately Agree (MA)
4.21 – 5.00	Strongly Agree (SA)
1.81 – 2.60	Disagree (D)
3.41 – 4.20	Agree (A)
1.00 – 1.80	Strongly Disagree (SD)

Results explained that students are interested in solving mathematical problems in school compared doing such in their house. Presence of a teacher and classmates as well as the learning facilities and environment is a huge influence on the interest of students.

It was discussed by Belbase (2013), that students' interest or motivation in learning Mathematics was found to be correlated positively with studying of Mathematics involving understanding and reflection, with high performance at school and with the ability to understand mathematical proofs.

The results from this study identified the factors that lead to the development of students' positive and negative attitude towards Mathematics with a significant impact on their learning of Mathematics and achievement.

Preference for Understanding

Preference for understanding refers to a student's grasp of fundamental mathematical ideas. Students with preference for understanding know more than isolated facts and procedures. They know why a mathematical idea is important and the contexts in which it is useful. Furthermore, they are aware of many connections between mathematical ideas.

Table 25 exhibits the students' affective domain in learning Mathematics in terms of attitude towards Mathematics as to preference for understanding.

Explained from the table that item "Understanding the content is unimportant; but it is important to know how to calculate in examinations" gained the highest computed weighted mean of 4.5 which is verbally described as "strongly agree".

On the other hand, the item "In learning a new topic, I am not concerned with how the formulas come about, I only care about how the formulas are applied in solving problems" registered the lowest computed weighted mean of 3.86 which is verbally interpreted as "agree". The overall mean was computed at 4.18 with a verbal description of "agree".

Table 25. Students' Affective Domain in Learning Mathematics in terms of Attitude Towards Mathematics as to Preference for Understanding

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. Reading the explanations in the textbook is not necessary, we can learn just by reading the formulas.	238	187	145	37	5	4.01	A
2. When learning a new topic, I wish that the teacher could tell us the formula right away and not ask us to look for it out for ourselves.	256	148	179	24	5	4.02	A
3. Understanding the content is unimportant; but it is important to know how to calculate in examinations.	364	231	12	3	2	4.56	SA
4. If I understand the concept concerned, I can always find a way to calculate the problems.	342	211	47	6	6	4.43	SA
5. In learning a new topic, I am not concerned with how the formulas come about, I only care about how the formula are applied in solving problems.	165	256	144	36	11	3.86	A
Overall Mean						4.18	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)

1.00 – 1.80	Strongly Disagree (SD)

The results imply that students preferred to know the process of computing for a problem in an examination rather than focusing on the concept.

According to Hannula et al. (2016), mathematical understanding is achieved through procedures and studying Mathematics with understanding.

These students value the process of learning Mathematics and they try to understand the nature of Mathematics from examples and practices. They enjoy non-routine type unstructured problem solving. Also, teaching and learning Mathematics guided by drill, practice, and copy from the board instead of construction of ideas by students may lead to this situation impacting severely in students' understanding of Mathematics and then achievement (Belbase, 2013).

Confidence

In order for students to make sense of math, they must believe that they are capable of understanding and learning Mathematics. Mathematical confidence reflects a growth mindset and includes a willingness to persevere, a positive attitude toward mistakes, a willingness to take risks, and self-reliance.

Students' affective domain in learning Mathematics in terms of attitude towards Mathematics as to confidence are summarized in Table 26.

Table 26. Students' Affective Domain in Learning Mathematics in terms of Attitude Towards Mathematics as to Confidence

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I have confidence in problems that involve substituting numbers into formulas.	165	256	144	36	11	3.86	A
2. I have confidence in doing pure numerical computations.	256	148	179	24	5	4.02	A
3. I have confidence in doing word problems.	342	211	47	6	6	4.43	SA
4. I am confident that I can get high grades in Math.	342	256	13	1	0	4.53	SA
5. I am confident of my answers during Math test.	165	256	144	36	11	3.86	A
Overall Mean						4.14	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Results imply that respondents strongly agree with the item "I am confident that I can get high grades in Math" which has the highest average of 4.53. Yet, students agree to the items "I have confidence in problems that involve substituting numbers into formulas" and "I am confident of my answers during Math test" with the lowest average of 3.86 correspondingly. The overall mean was garnered at 4.14 which is verbally described as "agree".

This indicates that confidence was built to every student in answering math drills.

Ignacio, et al. (2010), stated that students who have confidence, feel secure, calm, and with ability and skills in this subject positively influence Mathematics perception of the discipline, their Mathematics self-concept, and their expectations of achievement. In this sense, it is noted that students' beliefs about problem solving tend to affect positively or negatively their self-confidence in that activity.

Competence

Mathematical competence is the ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations. Building on a sound mastery of numeracy, the emphasis is on process and activity, as well as knowledge.

Table 27 summarizes students' affective domain in learning Mathematics in terms of attitude towards Mathematics as to competence.

It can be noticed that respondents strongly agree with the item "Usually I fully understand word problems" which has the highest average of 4.43. However, students moderately agree to the item "I can teach my classmates how to solve Mathematical problems." with the lowest average of 2.76. The overall mean was garnered at 3.45 which is verbally described as "agree". Students would rather choose to digest word problem alone than teaching other students in solving these Math questions.

Table 27. Students' Affective Domain in Learning Mathematics in terms of Attitude Towards Mathematics as to Competence

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I fully understand the content in the Mathematics class.	165	256	144	36	11	3.86	A
2. Usually I fully understand word problems.	342	211	47	6	6	4.43	SA
3. I can easily understand lessons in Mathematics.	145	148	141	127	51	3.34	A
4. I can solve word problems even without looking at my lectures.	47	176	145	132	112	2.86	MA
5. I can teach my classmates how to solve Math problems.	37	144	176	144	111	2.76	MA
Overall Mean						3.45	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Note that both competence and relatedness are social in nature, defining what behaviors and outcomes denote success in Mathematics, who is successful, and how groups can support each other (or not) to improve the success of individual members (Hannula, et al., 2016).

Along these line by Hannula et al., (2016), reiterated that students in problem-solving settings developed identities of competence that included Mathematics as part of their envisioned future, while students in lecture-based settings did not.

In the same sense, Ignacio, et al., (2010), reported that in order to attain a good level of performance, it is necessary, although not sufficient, for students to have a positive concept of their worth and of their competence to do the work at school. The student who enjoys high self-esteem learns more happily and easily than one who feels inadequate about himself; he will tackle new learning tasks with confidence and enthusiasm.

Textbook, Classroom Learning and Outside-Class Learning

For many students, math is boring, abstract, lacking in creativity, complex and very difficult to understand. Hence textbook, classroom learning and outside-class learning play a vital role in the success of the students in Math.

Table 28 presents the students' affective domain in learning Mathematics in terms of attitude towards Mathematics as to textbook, classroom learning and outside-class learning.

Table 28. Students' Affective Domain in Learning Mathematics in terms of Attitude Towards Mathematics as to Textbook, Classroom Learning and Outside-Class Learning

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. Usually I won't confine myself to reading the formula of the textbook but I read the explanations too.	342	211	47	6	6	4.43	SA
2. I wish there could be more pictures in the Math textbook so that I can understand the content better.	145	148	141	127	51	3.34	MA
3. I would use calculators for numerical calculations.	187	149	131	120	25	3.58	A
4. I love reading "supplementary references" in Mathematics	67	148	187	145	65	3.01	MA
5. I enjoy participating extracurricular activities in mathematics.	111	165	234	45	57	3.37	MA
Overall Mean						3.55	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Demonstrated from the table that item "Usually I won't confine myself to reading the formulas of the textbook but I read the explanations too" registered the highest computed weighted mean of 4.43 which is verbally described as "strongly agree". Meanwhile, the item "I wish there could be more pictures in the Math textbook so that I can understand the content better" received the lowest computed weighted mean of 3.34 which is verbally interpreted as "moderately agree". The overall mean was recorded at 3.55 with a verbal description of "agree".

Data gathered describe how students learn well through explanations indicated on the textbooks. Formulas are not enough to comprehend every solution. It should be explained well enough.

Accordingly, White (2015), emphasizes the role of teachers and schools in changing attitudes stating that, math achievement could be improved by, for example, better teaching methods, more motivated teachers or better course books, which has as its corollary the improvement of attitudes towards math.

Emotions in Mathematics

Emotions play a critical role in mathematical cognition and learning. It addresses ways in which emotions relate to cognitive processes involved in learning and doing Mathematics. Additionally, it covers social and affective issues such as identity and attitudes toward Mathematics.

Class Related Emotion

Class related emotions that students experienced in Mathematics class settings play a central role in their engagement and learning in the subject. Engagement inMathematics has been linked to higher motivation to learn, grades, academic success,increased attendance, and positive behavior change.

Table 29 shows the students' affective domain in learning Mathematics in terms of emotions in Mathematics as to class related emotion.

Table 29. Students' Affective Domain in Learning Mathematics in terms of Emotions in Mathematics as to Class Related Emotion

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I enjoy being in Math class.	165	256	144	36	11	3.86	A
2. I am confident when I go to Math class.	187	149	131	120	25	3.58	A
3. I am proud of my grades in Math.	247	165	111	69	20	3.90	A
4. I am angry.	12	159	134	238	69	2.68	MA
5. Thinking about Math class makes me feel easy.	34	169	247	129	33	3.07	MA
6. I get embarrassed when I answered wrong in math class.	48	138	121	127	178	2.59	D
7. I feel hopeless in Math.	57	147	187	164	57	2.97	MA
8. I get bored in math class.	12	145	239	211	5	2.92	MA
Overall Mean						3.20	MA

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

Results suggested that item "I am proud of my grades in Math," received the highest computed weighted mean of 3.90 which is verbally described as "agree". In contrary, the item "I get embarrassed when I answered wrong in Math class" yielded the lowest computed weighted mean of 2.59 which is verbally interpreted as "disagree". The overall mean was recorded at 3.20 with a verbal description of "moderately agree".

Results revealed that students are proud of what they have achieved in studying math. Learners are less likely to be embarrassed when arriving at a wrong answer.

White (2015), worked closely with the classroom teacher, discussing instruction, reflecting on lessons, and sharing thoughts about curriculum and lesson planning, as the classroom teacher worked to create a learning community based on a supportive emotional culture. Classroom organization – design of the learning environment, opportunity for social interaction, and availability of learning materials - was frequently reviewed and changed to meet the needs and interests of the children; this was a way of developing an affective learning environment.

This conforms with the findings of Mata, Monteiro and Peixoto, (2012), have also highlighted this aspect in research which shows that learning environments at home, at school, and within the peer group accounted for a significant amount of variance in student attitudes and, furthermore, that class had a significant impact on the scores achieved by students for these attitudes.

Learning Related Emotions

Learning-related emotions appear in different academic settings, such as attending class, studying and taking exams. Emotions can vary across these settings. Learning-related emotions can be differentiated by valence, object focus, and activation. In terms of valence, positive emotions (e.g., enjoyment) are distinguished from negative emotions (e.g., anxiety, boredom).

Table 30 explains the students' affective domain in learning Mathematics in terms of emotions in Mathematics as to learning related emotion.

Evidently, respondents obtained the highest verbal description "agree" with all items indicated in the table including the computed overall mean of 3.59 except for item "I feel hopeless when I think about studying Math" which received the lowest computed weighted mean of 3.19 with a verbal description of "moderately agree". Further examination of the table shows that item "I'm proud of my capacity in Math" obtained the highest computed weighted mean of 3.93.

Table 30. Students' Affective Domain in Learning Mathematics in terms of Emotions in Mathematics as to Learning Related Emotions

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. I enjoy acquiring new knowledge in Math	131	236	198	45	2	3.73	A
2. I have an optimistic view toward studying Math.	131	269	131	49	32	3.68	A
3. I'm proud of my capacity in Math.	245	148	153	64	2	3.93	A
4. Studying Math makes me relax.	134	234	158	59	27	3.64	A
5. I get tense and nervous while studying Math.	124	189	145	131	23	3.42	A
6. I feel ashamed that I can't answer Math problems.	137	237	159	67	12	3.69	A
7. I feel hopeless when I think about studying Math.	123	111	169	176	33	3.19	MA
8. The Math material bores me.	137	187	145	111	32	3.47	A
Overall Mean						3.59	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

This implies that students are proud of their skills and abilities in Mathematics. Students were given knowledge and confidence in dealing with the subject.

The affective component of attitude is the feeling or emotions of the individual associated with learning Mathematics (Ingram, 2015). Thus, the affective component is the source of driving the engagement of students towards Mathematics. Furthermore, the affective aspect is also influenced by the belief formed from the cognitive component of attitude, which creates a mindset that becomes constant over time and influences the feelings of the students towards learning Mathematics. As such, the cognitive and affective components of attitude are interrelated and deeply interact with each other (Sanchal & Sharma, 2017).

Test Emotions

In taking Mathematics tests, different kinds of emotions and thoughts run in the minds of students and this is exams have its ups and downs.

Table 31 depicts the students' affective domain in learning Mathematics in terms of emotions in Mathematics as to test emotions.

Table 31. Students' Affective Domain in Learning Mathematics in terms of Emotions in Mathematics as to Test Emotions

Item Statement	Responses (N=612)					Mean	VD
	5	4	3	2	1		
1. For me the Math test is a challenge and is enjoyable.	134	234	158	59	27	3.64	A
2. I have great hope that my Math abilities is sufficient.	124	189	145	131	23	3.42	A
3. I'm proud of how well I answered Math exam.	137	237	159	67	12	3.69	A
4. I feel very relieved after Math exam.	173	145	166	121	7	3.58	A
5. I am fairly annoyed during Math exam/test.	156	134	167	154	1	3.47	A
6. I feel panicky when taking exam/test in Mathematics.	156	177	185	91	3	3.64	A
7. I feel ashamed of my scores in Math test/exam.	167	234	151	56	4	3.82	A
8. I have lost all hope that I have the ability to do well in Math exam.	35	157	351	26	43	3.19	MA
Overall Mean						3.56	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
1.81 – 2.60	Disagree (D)
3.41 – 4.20	Agree (A)
1.00 – 1.80	Strongly Disagree (SD)
2.61 – 3.40	Moderately Agree (MA)

It can be seen from the table that respondents agreed with all items indicated in the table including the computed overall mean of 3.56 except for item "I have lost all hope that I have the ability to do well in Math exam," which received the lowest computed weighted mean of 3.19 with a verbal description of "moderately agree". A closer look on the table reveals that item "I feel ashamed of my scores in Math test/exam" obtained the highest computed weighted mean of 3.93.

Data gathered indicate that students feel ashamed of their exam scores in Math.
But it is the least option to lose hope in studying the subject. Learners still exert effort
and time to focus on every problem.

Effort is an indicator of motivation. Using Math examinations or tests to analyze diverse factors effects on Math performance and attitudes with students, identify a significant effect on motivation in Math attitudes. This study verified that effort was positively and significantly related to Math attitudes (Mata, 2012).

The Summary of Students' Affective Domain in Learning Mathematics

The affective domain includes factors such as student motivation, attitudes, perceptions and values. Teachers can increase their effectiveness by considering the
affective domain in planning courses, delivering lectures and activities, and assessing
student learning.

It can be gleaned from Table 32 that learner-respondents agreed that they had positive beliefs, attitude and emotions about Mathematics. This gives learners the confidence that they can learn and understand Mathematics, and eventually diminishing Math anxiety.

In the same way, Boaler (2016), reiterated that learners who develop positive attitude, beliefs and emotions toward Mathematics, have the intellectual ability through perseverance and effort that they can improve their Mathematical achievement.

Table 32. Summary of Students' Affective Domain in Learning Mathematics

Affective Domain in Mathematics Learning	Mean	VD
Mathematics Beliefs		
Time	3.59	A
Steps	3.40	A
Understanding	3.79	A
Usefulness	3.85	A
Overall Mean	3.66	A
Attitude towards Mathematics		
Interest	3.59	A
Preference for understanding	4.18	A
Confidence	4.14	
Competence	3.45	A
textbook, classroom learning and outside-class learning	3.55	A
Overall Mean	3.78	A
Emotions in Mathematics		
Class-related emotions	3.20	MA
Learning related emotions	3.59	A
Test emotions	3.56	A
Overall Mean	3.45	A

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

On the conducted interview with the teacher-respondents, they were asked about their roles in the development of students' beliefs, attitude and emotions toward Mathematics.

These respondents answered that it is their primary role to provide emotionally supportive environments that contribute to students' social and emotional development, manage classroom behaviors, deliver accurate content, and support critical thinking. Further, they added that their interactions with students, classroom organization, and emphasis on critical thinking within specific content areas can enhance students' development in beliefs, attitude and emotions toward any subject.

The Difference between the Perceptions of the Students and the Teachers

One of the objectives of the study is to find out if significant difference existed between the perceptions of the teachers and learners as regards (1) use of instructional strategies in teaching of Mathematics in terms of content and objectives, class environment, use of effective methods, class management, course objectives and examination system and preparation of lesson planning, and (2) school climate in terms of safety (safety rules and norms, teaching and learning (support for learning, social and civic learning), interpersonal relationships (respect for diversity, social support / adults, social support / students), school environment (school connectedness / engagement, physical surroundings), and social media. The t-test statistics for independent sample was utilized

to answer the aforementioned objective and results of the analyses are summarized in Table 33.

It can be seen from the table that significant difference was found between the perceptions of the learners and the teachers themselves as regards their use of effective methods in teaching Mathematics. This significant difference was brought about by the fact that the computed probability value for this variable (p=0.024) is less than the 0.05. Results showed that learner-respondents had greater perceptions as compared to their teachers in so far as the use of effective methods in teaching Mathematics is concerned. This implied that learner-respondents were satisfied about the methods of teaching used by the Math teacher.

Further examination of the same table reveals that no significant difference was found between the perceptions of the learners and the teachers with regard to use of instructional strategies in teaching of Mathematics in terms of content and objectives, class environment, class management, course objectives and examination system and preparation of lesson planning, and school climate in terms of safety (safety rules and norms, teaching and learning (support for learning, social and civic learning), interpersonal relationships (respect for diversity, social support / adults, social support / students), school environment (school connectedness / engagement, physical surroundings), and social media.

Table 33. Results of the t-test Analysis on the Difference between the Perceptions of the Students and the Teachers

Item	Mean		Mean Difference	t-value	Sig.
	Teacher	Learner			
content and objectives	4.23	4.31	-0.08	-0.682ns	0.514
class environment	4.36	4.36	0.00	0.000ns	1.000
use of effective methods	4.31	4.47	-0.16	-2.456*	0.024
class management	4.37	4.39	-0.02	-0.363ns	0.720
course objectives and examination system	4.35	4.29	0.06	0.690ns	0.510
preparation of lesson planning	4.46	4.36	0.10	1.056ns	0.322
School Climate safety rules and norms	4.23	4.15	0.08	0.151ns	0.712
support for learning	4.28	4.38	-0.10	-1.517ns	0.152
social and civic learning	4.37	4.40	-0.03	-0.339ns	0.740
respect for diversity	4.34	4.40	-0.06	-0.726ns	0.484
social support / adults	4.39	4.51	-0.12	-2.027ns	0.065
social support / students	4.34	4.49	-0.15	-1.898ns	0.094
school connectedness/ engagement	4.39	4.48	-0.09	-1.451ns	0.173
physical surroundings	4.39	4.37	0.02	0.207ns	0.839
social media	4.45	4.47	-0.02	-0.213ns	0.836

Legend: * = significant ($p \leq 0.05$) ns = not significant ($p > 0.05$)

This no significant difference was manifested by the computed probability values that ranged from 0.065 to 1.000. This indicated that teachers and learners had the same perceptions in so far as the aforementioned variables are concerned.

The results of research conducted by Anderson (2011), supported the present findings. In his study he conducted a survey to school stakeholders such as teachers, students and parents to evaluate the school climate in selected rural schools in the community. After applying some statistical treatment, he arrived at the decision that no significant difference was found among the evaluations of the three groups of respondents. Hence, he accepted the null hypothesis of the study.

The Relationships between the Teachers' Frequency of Use of Teaching Methods and the Students' Affective Domain in Mathematics

In this part of the study, the relationship between the teachers' frequency of use of instructional teaching methods and the students' affective domain in Mathematics was determined using the Pearson Product-Moment Correlation Coefficient and results of the analyses are presented in Table 34.

It can be noted from the table that significant to highly significant correlations were found between the teachers' frequency of use of teaching methods and the students' affective domain in Mathematics. Furthermore, direct relationships existed between the aforementioned variables as implied by the positive sign of the computed correlation values that ranged from 0.391 to 0.928.

These results disclosed that as the frequency of use of teaching methods (Inductive, Deductive, Lecture, Demonstration, Integrative, Type-Study, Problem-Solving, Project, Expository) increases, the level of students' affective domain in Mathematics (Beliefs in Mathematics, Attitude towards Mathematics, emotions in Mathematics) also increases.

Table 34. Results of the Correlation Analysis on the Relationships between the Teachers' Frequency of Use of Teaching Methodsand the Students' Affective Domain in Mathematics

Teaching Methods	Students' Affective Domain in Mathematics		
	Mathematics Beliefs	Attitude towards Mathematics	Emotions in Mathematics
1. Inductive	0.818** (0.000)	0.766** (0.001)	0.872** (0.000)
2. Deductive	0.833** (0.000)	0.779** (0.000)	0.720** (0.002)
3. Lecture	0.391* (0.045)	0.588* (0.017)	0.561* (0.024)
4. Demonstration	0.777** (0.000)	0.649** (0.006)	0.694** (0.003)
5. Integrative	0.781** (0.000)	0.799** (0.000)	0.658** (0.006)
6. Type-Study	0.406* (0.040)	0.438* (0.030)	0.493* (0.028)
7. Problem-Solving	0.800** (0.000)	0.928** (0.000)	0.675** (0.004)
8. Project	0.426* (0.036)	0.418* (0.037)	0.428* (0.036)
9. Expository	0.777** (0.000)	0.762** (0.001)	0.852** (0.000)

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

The findings of the study only showed that Mathematics teachers can breathe new life into the subject by utilizing various teaching strategies in the subject. Further,

these teachers are aware and understand that students learn in different ways. They keep up with the best practices in Math education and regularly incorporates them into their instruction to help all of their students learn.

This position was corroborated by Flozoff (2010), who stated that instructional strategies were found directly and significantly correlated to the affective domains of high school students in Mathematics. This showed that instructional strategies help in improving students' affective functioning as its main goal is to ensure individual student's mastery of the subject matter.

The gathered data from the interview were in accordance with the findings of the present study. When the teachers were asked about the importance of instructional teaching methods in developing the students' beliefs, attitude, and emotions toward Mathematics, they answered that teaching strategies motivated the students to focus and understand Math concepts. When the students are motivated to learn Math, they will get high grades which will eventually result to positive attitude, beliefs and emotions towards the subject.

The Relationships between Teaching methods in Mathematics and Students' Affective Domain

The results of the correlation analyses which were done to determine if significant
correlations existed between the teaching method and students' affective domain are
presented in Table 35.

It can be noticed from the table that highly significant relationships were found between the teaching method for content and objectives, class environment, use of effective methods, class management, course objectives and examination system and preparation of lesson planning and the students' affective domain in Mathematics. These highly significant correlations were brought about by the fact that the computed probability values that ranged from 0.009 to 0.000 are smaller than the 0.01 level of significance.

Further perusal of the same table reveals that direct correlations existed between
the aforementioned variables as implied by the positive sign of the computed correlation
values that ranged from 0.628 to 0.928.

Table 35. Results of the Correlation Analysis on the Relationships between the Teaching methods and the Students' Affective Domain in Mathematics

Instruction Strategies	Students' Affective Domain in Mathematics		
	Mathematics Beliefs	Attitude towards Mathematics	Emotions in Mathematics
1. content and objectives	0.738** (0.000)	0.928** (0.000)	0.806** (0.000)
2. class environment	0.781** (0.000)	0.779** (0.000)	0.762** (0.000)
3. use of effective methods	0.777** (0.000)	0.628** (0.009)	0.852** (0.000)
4. class management	0.701** (0.002)	0.803** (0.000)	0.773** (0.000)
5. course objectives and examination system	0.894** (0.000)	0.873** (0.000)	0.811** (0.000)
6. preparation of lesson planning	0.886** (0.000)	0.823** (0.000)	0.864** (0.000)

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

These results meant that as the level of teachers' instruction strategies increases, the level of students' affective domain also increases. Additionally, this indicated that Mathematics teacher respondents skillfully integrated a range of instructional approaches and resources to meet the diverse learning needs of their students.

In accordance to the findings of the present study, Kele and Sharma (2014), asserted that teachers' instructional approaches play a vital role and have a major influence in the development of students' affective domains in Mathematics. Moreover, he added that teachers can do many things to facilitate the classroom learning to alleviate students' engagement level and confidence in learning mathematics. According to Attard (2012), teachers can find ways to encourage student engagement and confidence in learning Mathematics. This can be achieved by implementing meaningful activities embedded in real-life contexts.

Results of the conducted interview supported the quantitative findings of the study. When the students were asked about the importance of their teachers' strategies in Mathematics learning, they answered that the strategies of their teachers made them motivated to participate in class discussion. Further, they said that they firmly believed that teachers' strategies increased their confidence and willingness to study Math.

The Relationships between School Climate and Students' Affective Domain in Mathematics

Table 36 exhibits the results of the correlation analyses which were done to determine if significant correlations existed between school climate in terms of safety, teaching and learning, interpersonal relationships, school environment and social media, and students' affective domain in Mathematics.

It can be observed from that table that significant correlations were found between school climate in terms of safety, teaching and learning, interpersonal relationships, school environment and social media, and students' affective domain in Mathematics. These significant correlations were due to the fact that the computed probability values for these variables that ranged from 0.50 to 0.013 are less than or equal to the level of significance of 0.05.

A close examination of the same table reveals that direct relationships existed between the aforementioned variables as implied by the positive sign of the computed correlation values that ranged from 0.473 to 0.607. This indicated that as the level of school climate increases, the level of students' affective domain in Mathematics also increases.

Table 36. Results of the Correlation Analysis on the Relationships between SchoolClimate and Students' Affective Domain in Mathematics

School Climate	Students' Affective Domain in Mathematics		
	Mathematics Beliefs	Attitude towards Mathematics	Emotions in Mathematics
1. safety	0.545* (0.017)	0.599* (0.014)	0.607* (0.013)
2. teaching and learning	0.558* (0.025)	0.601* (0.014)	0.491* (0.047)
3. interpersonal relationships	0.494* (0.047)	0.603* (0.014)	0.473* (0.050)
4. school environment	0.498* (0.046)	0.515* (0.031)	0.526 (0.032)
5. social media	0.545* (0.017)	0.484* (0.048)	0.476* (0.050)

Legend:

Scale	Verbal Description
4.21 – 5.00	Strongly Agree (SA)
3.41 – 4.20	Agree (A)
2.61 – 3.40	Moderately Agree (MA)
1.81 – 2.60	Disagree (D)
1.00 – 1.80	Strongly Disagree (SD)

These results indicated that feeling safe—socially, emotionally, intellectually, andphysically—is a fundamental human need. Feeling safe in school powerfully promotes student learning and healthy development.

In conjunction to the findings of the present study, Ma, et al., (2009), reported that the ever-growing body of research on school climate continuously attests to its importance in a variety of overlapping ways, including social, emotional, intellectual, and physical safety; positive youth development, mental health, and healthy relationships; higher graduation rates; school connectedness and engagement; academic achievement; social, emotional, and civic learning; teacher retention; and effective school reform.

In the same manner, Lee, et al., (2011), agreed that school climate has a profound impact on students' mental and physical health. School climate has been shown to affect middle school students' self-esteem, mitigate the negative effects of self-criticism, and affect a wide range of emotional and mental health outcomes. Research has also revealed a positive correlation between school climate and student affective domains.

On the conducted interview with the teacher-respondents they were asked about the importance of school climate in developing the students' beliefs, attitude and emotions toward mathematics. These respondents answered that environment is very essential for the students' beliefs, attitude and emotions. Further, they added that healthy environment creates a perfect individual. A positive school climate enhanced students' behavior, academic achievement, and motivation. It also has a positive impact on the formation of students' attitudes and behaviors in many key areas like making decisions, equality and justice, caring, sensitivity, and discipline of a student.

Meanwhile, the student respondents were also asked about the importance of school environment in learning Mathematics. These respondents replied that when they see that everything in their environment is organized, they will be motivated to study harder. Moreover, when there are harmonious relationships between teachers and students, class objectives will be easier to attain.

The Importance of Teaching Methods and School Climate in the Development of Students' Affective Domain in Mathematics

Results of the conducted interview with the teachers and the learners themselves revealed that the instructional teaching method used by the teachers played a significant role in the development of their affective domains in Mathematics. Moreover, qualitative results also showed that the instructional method employed by the teachers increased the motivation of the students that is eventually resulted to higher academic achievement in Mathematics. If students obtained higher grades in the aforementioned subject, this would positively affect their beliefs, emotions, confidence and attitude towards Mathematics.

In the same way, the teachers and the learners themselves firmly believed that school climate contributed to the positive development of their affective domains in Mathematics. Further, these respondents posited that school environment which is conducive for learning and healthy relationships among school stakeholders positively influenced the learners' beliefs, emotions, confidence and attitude towards mathematics.

These results implied that teaching method and school climate played a vital role in the development of learners' affective domain in Mathematics.

The Proposed Action Plan

Results of the study revealed that teacher-respondents utilized teaching methods which are very common in teaching Mathematics. Hence, the researcher proposed an action plan that will increase the pedagogical expertise of the teachers in Mathematics.

Table 37. Proposed Action Plan

Objective	Actions	Timeline(s)	Persons Involved	Outcomes	Suggestions/ Recomendations
1.Provide alternative and creative teaching strategies	Conduct Learning Action Cell (LAC)	Last Quarter of School Year 2020-2021	Researcher, Head Teacher and Math Teachers		
2. Expose teachers to the 21st century teaching strategies	Invite lecturer/ experts from prestigious universities to conduct seminars and workshop about the latest strategies in teaching Math.	First Quarter of School Year 2021-2022	Lecturer, researcher, Math teachers		
3.Encourage and motivate Math teachers to pursue higher learning to improve their teaching capabilities.	Lessen the workload of teachers who are taking up graduate degree courses.	School Year 2021-2022	Principal and school head in Math		

CHAPTER IV

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the major findings, the conclusions arrived at based on the findings, and the recommendations given in accordance with the conclusions.

Findings

This study determined the relationships between Mathematics teaching methods and students' affective domain in Mathematics. Further, it determined the relationship between school climate and the affective domain of the students in Mathematics in Junior High Schools during the school year 2019-2020.

Using the procedures described in the preceding chapter, the answers to the problems raised in this study were ascertained and summarized as follows: Findings revealed that Problem-Solving is the most commonly used teaching method used by Mathematics teachers in teaching the subject.

Learners and teacher-respondents themselves strongly agreed that they used effective method in teaching Mathematics in terms of content and objectives, class environment, use of effective methods, class management, course objectives and examination system, and preparation of lesson planning.

The teacher and learner-respondents strongly agreed that they had a pleasant school climate. The learner-respondents agreed that they had positive beliefs, attitude and emotions about Mathematics.

No significant difference was found between the perceptions of the learners and the teachers with regard to use of instructional method in teaching of Mathematics in terms of content and objectives, class environment, class management, course objectives and examination system and preparation of lesson planning, and school climate in terms of safety (safety rules and norms, teaching and learning (support for learning, social and civic learning), interpersonal relationships (respect for diversity, social support / adults, social support / students), school environment (school connectedness / engagement, physical surroundings), and social media.

Significant correlations were found between the teachers' frequency of use of instructional teaching method and the students' affective domain in Mathematics.

Highly significant correlations were found between teaching methods for content and objectives, class environment, use of effective methods, class management, course objectives and examination system and preparation of lesson planning and the students' affective domain in Mathematics.

Significant correlations were found between school climate in terms of safety, teaching and learning, interpersonal relationships, school environment and social media, and students' affective domain in Mathematics.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

There is no significant difference between the perceptions of the students and the teachers themselves with regard to their use of method in teaching of Mathematics.

There are significant relationships between the teachers' frequency of use of teaching methods and the students' affective domain in Mathematics.

There are significant relationships between Mathematics teaching methods and students' affective domain in the said subject.

There are significant relationships between school climate and students' affective domain in Mathematics.

Recommendations

In light of the findings and conclusions of the study, the following recommendations were offered:

1. teachers may be trained in the integration of modern gadgets to instructional strategy to improve intellectual functioning of the students and ensure better performance in Mathematics;
2. school administrator may hold seminar and workshop on modern and high tech instructional strategy for teachers so that they can adapt it for effective classroom instruction to improve students' academic achievement in Mathematics;
3. teachers may solicit assistance from ide them the necessary modern and uipment which can be used for ching in Mathematics and other ell;
4. if possible, internet access may be provided in the whole school area so that it could help the teachers and students in learning Mathematics.
5. the number of students may be reduced in each class to ensure quality of teaching; and

6. for future researchers, further research along this line could be conducted. Inclusion of some other dependent variables such as students' academic performance and study habits could be considered to further study the importance of teachers' instructional strategies and school climate.

REFERENCES

Adunola, O. (2011). "The Impact of Teachers' Teaching Methods on the Academic Performance of Primary School Pupils in Ijebu-Ode Local cut Area of Ogun State," *Ego Booster Books, Ogun State, Nigeria*.

Adeogun, A. A., & Olisaemeka, B. U. (2011). Influence of school climate on students' achievement and teacher productivity for sustainable development. *US-China Education Review, 8*(4), 552-557.

Akinbobola, AO, Ikitde GA (2011). Strategies for teaching mineral resources to Nigeria secondary school science students. *African Journal of Social Research and Development*, 3(2): 130-138.

Anderson, J. P. (2011). Measuring, improving and sustaining school climate in rural areas. *Journal of Rural School*, Vol. 18, No. 4.

Attard, C. (2012). Engagement with mathematics: What does it mean and what does it look like? *Australian Primary Mathematics Classroom, 17*(1), 9–12.

Austin, G., O'Malley, M., & Izu, J. (2011). *Making sense of school climate*. San Francisco: WestEd. Available for download at http://www.californiaS3.wested.org.

Ayeni, A.J. (2011). "Teachers professional development and quality assurance in Nigerian Secondary Schools," *World Journal of Education*, 1(2):143-149.

Bear, G. G., Yang, C., Pell, M., and Gaskins, C. (2014). Validation of a brief measure of teachers' perceptions of school climate: relations to student achievement and suspensions. *Learn. Environ. Res.* 17, 339–354. doi: 10.1007/s10984-014-9162-1

Belbase, S. (2013). Images, anxieties, and attitudes toward mathematics. International Journal of Education in Mathematics, Science and Technology, 1(4), 230-237.

Bergren, D. A. (2014). *The impact of school climate on student achievement in the middle schools of the commonwealth of Virginia: A quantitative analysis of existing data* (Unpublished doctoral dissertation). The George Washington University, USA.

Birbeck, D & Andre, K (2009). *The affective domain: beyond simply knowing*, ATN Conference, RMIT University.

Boaler, J. (2016). *Mathematical mindsets Unleashing students' potential through creative math, inspiring messages and innovative teaching*, San Francisco: Jossey-Bass.

Camarro, Z. (2012). What Teacher strategy Affect Student Achievement in Mathematics? *Journal of Mathematics Research*. 4(2), 124-126.

Chang, L. G. (2010). Instructional devices in mathematics teaching. *Journal of Educational Development*, 10(4): 18–23.

Chang, W. (2002). "*Interactive Teaching Approach in Year One University Physics in Taiwan: Implementation and Evaluation,"*Asia-Pacific Forum on Science Learning and Teaching 3, (2002). Available on <http://www.ied.edu.hk/apfslt/v3_issue1/changwj/index.htm
.

Cohen, J., McCabe, E., Michelli, N., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record, 111 (1), 180-213*.

Dagnew, A. (2014). Impact of school climate on students' academic achievement in Bahir Dar secondary schools: Ethiopia. *Education Research Journal, 4*(2), 28-36.

Dela Cruz, J. K. B. & Lapinid, M. R. C. (2014, March). Students' Difficulties in
Translating Worded Problems into Mathematical Symbols. *DLSU Research Congress 2014*. Retrieved from http://www.dlsu.edu.ph/conferences/ dlsu_research_congress/ 2014/_pdf/proceedings/LLI-I-009-FT.pdf.

Devine, A., Fawcett, K., Szűcs, D., & Dowker, A. (2012). Gender differences in mathematics anxiety and the relation to mathematics performance while controlling for test anxiety. *Behavioral and Brain Functions*, 8(33), 2–9.

Enríquez, Jakeline & Valencia, Heriberto & Oliveira, Andreia. (2018). Strategies Used by Teachers of Mathematics

in the Implementation of Tasks. Modern Applied Science. 12. 114. 10.5539/mas.v12n5p114.

Flozoff, K.A. (2010). Instructional Strategies: Its Contributions to High School Students' Affective Domains in Mathematics. *Journal of Educational Research in Mathematics*. Vol 4(2), pp.43-47.

Fraser, M. J. (2012). Secondary students' attitude towards mathematics in a selected school of Maldives Institute of Education. *International Journal of Humanities and Social Science*, 1(15), 277–281.

Gay, L. R., Mills, G. E. & Airasian, P. (2009). Educational research: Competence for analysis and applicantions (9th ed). https;//kinasevych.ca/2015/10/08/gay-mills-airasian-2009-educational-research-competencies-for-analysis-and-application-9th-edition/

Hannula, & Di Martino, & Pantziara, & Zhang, & Morselli, & Heyd-Metzuyanim, & Lutovac, & Kaasila, & Middleton, & Jansen, & Goldin. (2016). Attitudes, Beliefs, Motivation and Identity in Mathematics Education. 10.1007/978-3-319-32811-9.

Hanson, T., Austin, G., & Zheng, C. (2011). *The relationship of academic achievement and school well-being.* San Francisco: WestEd. Summary available for download at http://www.childrennow.org/index.php/learn/beingwelllearningwell.

Hidalgo, S., Maroto, A., Ortega, T., & Palacios, A. (2013). Atribuciones de afectividad hacia las Matemáticas. UNIÓN. *Revista Iberoamericana de Educación Matemática*, 35, 93-113.

Hightower, L.T. (2011). Critical issue: Using technology to improve student achievement. 37(2), 155-192. Subject teaching: commitment, constraints, caution and change. *Journal of Curriculum*, 37(2), 155-192.

Ignacio, N., Blanco Nieto, L. J., & Barona, E. (2010). The affective domain in mathematics learning. *International Electronic Journal of Mathematics Education*.

Ingram, N. (2015). Mathematical engagement skills. In V. Steinle, L. Ball, & C. Bardini (Eds.), *Mathematics Education: Yesterday, today and tomorrow* (Proceedings of the 36th annual conference of the Mathematics Education Research Group of Australasia). Melbourne: MERGA.

Jagero, N. O. (2011). An evaluation of school environmental factors affecting performance of boarding secondary students of Kenya. *African Journal of Education and Technology, 1*(1), 127-138.

Johnson, F., & Cyrnferg, O. (2017). The effect of teacher strategies on student achievement in mathematics and perceptions of instructional quality. *Journal of Mathematics Education*, 2(38) 129-131.

Kele, A., & Sharma, S. (2014). Students' beliefs about learning mathematics: Some findings from the Solomon Islands. *Teachers and Curriculum, 14,* 33-44.

Khan, S., Haider, S. Z., & Bukhari, A. A. (2016). Instruction strategies work out by mathematics teachers:. *European Journal of Science and Mathematics Education evaluating the affect on bachelor of education* , 103-114

Kozina, A., Rozman, M., Perse, T. V., & Leban, T. R. (2008). The school climate as a predictor of the achievement in Slovenia: A students', teachers', and principals' perspective. *The proceeding of IRC, Slovenia*.

Kutsyuruba, & Klinger, & Hussain. (2015). Relationships among school climate, school safety, and student achievement and well-being: a review of the literature. Review of Education. 3. 103-135. 10.1002/rev3.3043.

Lee – Chua, Q. N. (2012, August 26). Even scientists suffer from math anxiety. *Philippine Daily Inquirer*. Retrieved from http://newsinfo.inquirer.net/258226/even-scientists-suffer-frommath-anxiety.

Lee, T., Cornell, D., Gregory, A., & Fan, X. (2011). High suspension schools and dropout rates for Black and White students. *Education and Treatment of Children*, *34*, 167–192

McCabe, Jennifer A (2014). *Learning and Memory Strategy Demonstrations for the Psychology Classroom.* Baltimore: Goucher College

Ma, L., Phelps, E., Lerner, J. V., & Lerner, R. M. (2009). The development of academic competence among adolescents who bully and who are bullied. *Journal of Applied Developmental Psychology*, *30*, 628–644.

Mata, M. d., Monteiro, V., & Peixoto, F. (2012). Attitudes towards Mathematics: Effects of Individual, Motivational, and Social Support Factors. *Hindawi*. doi:https://doi.org/10.1155/2012/876028

Maxwell, S., Reynolds, K. J., Lee, E., Subasic, E., & Bromhead, D. (2017). The Impact of School Climate and School Identification on Academic Achievement: Multilevel Modeling with Student and Teacher Data. *Frontiers in psychology*, *8*, 2069. https://doi.org/10.3389/fpsyg.2017.02069.

Mulligan, (2011). *Towards understanding the origins of children's difficulties in mathematics learning*, Australian Journal of Learning Difficulties, 16:1, 1939, DOI: 10.1080/19404158.2011.563476.

Nyamosi, J. M. (2013). *Influence of school climate on pupils' performance at Kenya Certificate of Primary Education in Central division of Machakos District Kenya* (Unpublished M.Ed project). University of Nairobi, Nairobi.

Odeh, R. C., Oguche, O. A., & Ivagher, E. D. (20I5). Influence of school environment on academic achievement of students in secondary schools in Zone 'A' Senatorial District of Benue State, Nigeria. *International Journal of Recent Scientific Research, 6*(7), 4914-4922.

Ortiz. (2016). The problem-solving process in a mathematics classroom. Transformations: A Publication of the Florida Association of Mathematics. 1. 4-14.

Pascual, N. T. (2014). Impact of Mathematics and Science Instructional Practices, Curriculum and Academic Achievement to the Career Choice of Laboratory School Graduates of University of Rizal System-Morong. *International Journal of Sciences: Basic and Applied Research.* 5(2), 397-398.

Popham, W.J. (2011). *Classroom Assessment: What teachers need to know.* Boston, M.A: Pearson.

Reynolds, & Lee, & Turner, & Bromhead, Subasic. (2017). How does school climate impact academic achievement? An examination of social identity processes. School Psychology International. 014303431668229. 10.1177/0143034316682295.

Sanchal, A., & Sharma, S. (2017). *STUDENTS' ATTITUDES TOWARDS LEARNING MATHEMATICS*: IMPACT OF. *Eric*.

Santos, K.M. (2011). The perceived influence of school climate on students' academic performance. *The Elementary School Journal*, 93, 355 372.

Selamat, N. et al., (2013). "The Impact of School and Organizational Climate on Teachers' Job Performance". *Educational Research Journal*, 2(1), 71-82.

Song, J. M. and Kang, E. C. (2012) Technology for teaching: past versus present practices. *Educational Technology*, 37(2), 25–38.

Stoneski, C., & Chowkey, M. (2017). The impact of teaching strategies and practices on Mathematics achievement of students. *Journal of Research in Education*. 7(2), 99-112.

Swanson, H. L. (2011). Searching for the Best Model for Instructing Students with Learning Disabilities. *Focus on Exceptional Children, 34*(2), 115.

Tambychik, T., & Meerah, T. (2010). Students' Difficulties in Mathematics Problem-Solving: What do they Say? *Science Direct*, 142-151. doi:https://doi.org/10.1016/j.sbspro.2010.12.020

Thapa, A., Cohen, J., Guffey, S., & Higgins-D' Alessandro, A. (2013). A Review of School Climate Research. *Review of Educational Research, 83*(3), 357-385.

Usaini, M. I., & Bakar, N. A. (2015). The influence of school environment on academic performance of secondary school students in Kuala Terengganu, Malaysia. *International Conference on Empowering Islamic Civilization in the 21st Century, 6-7 September 2015, Universiti Sultan Zainal Abidin, Malaysia.*

Vincent, EO, Akpan UT (2014). Instructional strategies and students' academic performance in electrical installation in technical colleges in Akwa Ibom State: Instructional skills for structuring appropriate learning experiences for students. *International Journal of Educational Administration and Policy Studies*, 6(5): 80-86.

White, G. C. (2015). Enhancing students Mathematics attitude through the storybook reading experience. *Journal of Development in Mathematics Education,* 20(1), 5–7.