

## MATHEMATICS TEACHERS INSTRUCTIONAL COMPETENCE, LEARNER-RELATED FACTORS IN RELATION TO THE ACADEMIC PERFORMANCE IN MATHEMATICS 6

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### ABSTRACT

This study was conducted to determine the mathematics teachers' instructional competence, learner-related factors in relation to the academic performance in Mathematics 6. The researcher made use of the descriptive-correlation design to answer questions on relationships within measurable variables with an intention to explain, predict and control a phenomenon. The respondents of this study were the 300 grade six pupils of the five elementary schools in Jose Abad Santos 1 District for the school year 2019-2020, and were selected through proportionate stratified random sampling. The data were collected with the use of survey questionnaires on instructional competence and learner-related factors which were statistically analyzed using mean, standard deviation, and Pearson-r. The study revealed that the level of mathematics teachers' instructional competence exhibited very high level of competence. Also, the learner-related factors had a high level of favorable practices towards their academic performance in Mathematics 6. Additionally, it was found that the relationship between mathematics teachers' instructional competence was not significant. In the same way, the relationship between the learner-related factors and academic performance of grade 6 learners had shown to be not significant.

**Keywords:** Education, Instructional Competence, Learner-Related Factors, Descriptive- Correlational, Academic Achievement, Grade 6 Learners, Philippines.

### I. INTRODUCTION

Critical- thinking and problem solving are the twin-goals in understanding the Conceptual Framework of Mathematics Education. However, the low performance in Mathematics continues to decline and this has been the case since 2005 wherein learners have failed to reach the targeted 75% Mean Percentage Scores (MPS) in National Achievement Test (UNESCO'S Education for All Framework, 2017).

Consequently, as reflected in the 2018 Program International Student Assessment (PISA), Philippines ranked 77th out of 79 countries that participated in the said international assessment. The Filipino students scored below average of 353 in mathematics from a minimum of 420. Also, Philippines National Achievement Test (NAT) in Mathematics in the academic school year 2014-2015 showed that the performance of the Grade 6 learners in Mathematics falls on below standard range (M= 64.41%). Accordingly, in Mindanao, school year 2018-2019, the overall MPS result in Mathematics performance of all public schools both elementary and secondary in Davao Occidental Division is very low. Particularly in Jose Abad Santos 1 District, the problem is greatly observed the MPS of elementary learners is 37.72% wherein the elementary learners have failed to reach the targeted 75% MPS, based on the memorandum guideline of NETRC and DepEd such score is very close to MPS of low performing schools/ district.

Lee (2016) emphasized that a country specific norm-referenced definition of competence, together with concerns that these children are nonetheless performing more poorly than their peers in the same educational system, would likely have direct intervention efforts to them. Despite the numerous studies with regards to performance and struggles of school children in the Mathematics learning area, very few have ventured into finding out the effects of Mathematics teachers' instructional competence and learner-related factors in relation to academic achievements in Mathematics 6, and none so far in the researcher's locality.

In the same manner, Hamilton, Mlhaly, and Engberg (2018), added that among school-related factors, the teacher matters most. This particularly is a bigger issue in higher education, for it has a different level of delivering instruction in Mathematics. It is important for educators to adopt instructional design techniques to

attain higher achievement rates in Mathematics. Saritas (2004) emphasized that there is a pressing demand among teachers to undergo relevant trainings that aim to enhance their instructional practices. As the learning environment and learning preference of the student continue to evolve, teachers must upgrade their pedagogical competency in order to respond to the needs of the learners. The teaching practice of teachers is central to student learning.

In the light of the current situation, this study would help and inspire teachers in doing their best in teaching Mathematics because they are responsible with regards to influencing, helping, and molding their students which are relevant to help pupils to determine their strength and weaknesses in the area of mathematics. Therefore, the researcher is able to focus on this idea and highly seeks to explore the mathematics teachers' instructional competence, learner-related factors in relation to the academic performance in Mathematics 6. The appropriateness and the practicability of the dissemination plan, and the suitability of the recipients of the information, were reviewed and determined by the Ethics Review Committee

The researcher believes that the study would give significant benefits to the mathematics 6 learners since it would make them assess their performance in the mathematics learning area and help them meaningfully develop their study habits and develop interest in mathematics. This would also let the mathematics teachers know their instructional competence. This would enable them to identify the kinds of strategies that are effective and the strategies that need modification so such strategies become essential in preparation of relevant instructional materials and effective learning activities.

Lastly, the publication of this study would serve as dissemination mechanism of the results of this study. The contact information of the researcher would be made available for prospective readers for their ready reference and present a research forum to the stakeholders.

### **Statement of the Problem**

This study was focused on mathematics teachers' instructional competence learners-related factors in relation to academic achievement of learners in mathematics 6. Specifically, this study sought answers to the following problems:

1. What is the level of instructional competence of mathematics teachers in terms of:
  - 1.1. Mastery of the subject;
  - 1.2. Teaching skills;
  - 1.3. Classroom management; and
  - 1.4. Evaluation skills?
2. What is the level of learners-related factors in terms of:
  - 2.1. Interests; and
  - 2.2. Study habits?
3. What is the level of academic performance of learners in mathematics 6?
4. Is there a significant relationship between:
  - 4.1. Instructional competence of mathematics teachers and academic performance in mathematics 6.
  - 4.2. learner- related factors and academic performance in mathematics 6.

## **II. REVIEW OF RELATED LITERATURE**

In this section are the discussions of the variables used in this study based on related literature. These variables were Instructional Competence, Learners-Related Factors and Academic Achievement.

### **Instructional Competence**

Tan (2018) states that a good lecturer is a lecturer who is able to do the learning process well. It means that lecturers should be able to convey ideas simply and clearly, prepare the subject matters as well as possible, conduct good communication that can stimulate two ways communication. In addition, lecturers should be able to engage students to participate in the classroom. A good lecturer is also able to attract the students' attention, funny, dynamic, cheerful and confident. Lecturers also must have innovative measures and eager to teach.

Being eager to teach motivates the lecturers to strive to teach as effective as possible and ensures that the students learn well. It is proved by the students' response that the majority of them appreciate eager lecturers.

Further, Okhide (2016) emphasized that accountability in education has been a critical issue among stakeholders in the schools' system. Among these stakeholders, teachers and students are mostly held accountable for educational outcomes. Each time students' academic performance falls below expectation, they are usually blamed for unpreparedness to study and teachers for lack of instructional competence and dedication to their jobs. The fact however, is that there is a dearth of professional mathematics teachers in the schools' system. As a result, graduates of mathematics and science subjects who had no formal training in pedagogy are employed to teach mathematics in the schools. Okorie and Agah (2014) assert that 'classroom teachers wield enormous power and their activities and attitude have great influence on the students' behavior. Teaching Mathematics and Science has become a major issue in different countries and regions, the teachers' strategies and quality has affected performance of the students, as they are not able to understand the content being taught (Teaching Mathematics and Science, 2018). According to the report released by the University of the Philippines, Mathematics education has deteriorated in many places including the Philippines. Studies in the Philippines focuses on students' achievement in Mathematics, methods and strategies in making students learn and appreciate Mathematics. Only a few have ventured the road to understanding Mathematics faculty and their performance. Some researchers have been trying to find out why mathematics seemed to be hated by most students. A lot of emerging factors were identified that may have caused the students' attitude towards the subject and it always emerged that the teacher him/herself was never out of it. Every behavior is a product of underlying factors causing it to be put into action.

Both teachers' instructional competence and attitude towards teaching (collectively referred to as teacher factors) were highly related to students' learning behaviour in Mathematics. A significant relationship was found between these teacher factors and students' learning behaviour in Mathematics. This implies that irrespective of the mathematical capabilities of students, if teachers display negative attitude towards Mathematics students may not develop positive learning behaviour towards the subject. The more positive a Mathematics teachers' attitude toward the subject, the positive the students' attitude would be and vice versa. Our finding agrees with that of Kunter, Klusmann, Baumert, Richter, Voss, & Hachfeld (2013), which shows that 'teachers' competence affected students' achievement and enjoyment'. Lucero (2018) stated that the level of instructional practices of teachers obtained an overall mean of 4.60 or very extensive.

**Mastery of the Subject Matter.** Kamami, Ngugi and Thinguri (2014) their study established that it is of necessity that teachers master the subject matter before imparting it to learners since it enables the teacher to adequately prepare for content delivery. In their preparations, teachers are required to simplify information in specific subjects for learners understanding, and this is possible if teachers undergo training in colleges. The mastery of subject matter empowers the student teacher with knowledge for critical thinking and the capacity to help their learners to grasp the appropriate knowledge, skills, attitudes and values. The student- teacher's knowledge of the subject matter should go beyond the limits of the curriculum for them to be able to explain to the learners, for they can maneuver around it. According to Dunhill (2000), teacher knowledge must be of two-fold nature. A good teacher must first possess a wide general knowledge and within the confines of this general knowledge, a sound understanding of the subject he is to teach in the classroom.

Barnuevo & Hasegawa (2008) revealed in their research "Teacher's Instructional Competencies to the Students' Academic Performance, Don Bosco College, Canlubang, Laguna", that the students' perception on the teaching skills of their Math teachers. They responded "often" in all the items in identifying the practice of adequate. The grand mean 3.40 with a standard deviation .750 revealed that the students perceived their Mathematics teachers "often" shows teaching skills in their respective instruction. This result implies that the instructional competencies of their Mathematics teachers in terms of Teaching Skills are adequate.

**Teaching Skills.** Innovative teaching in mathematics involves strategy, method and learning function that are being used in teaching mathematics. Innovative teaching in mathematics has advantages in three aspects namely: teaching by problem solving, teaching by experience, teaching by individual and teamwork. This learning would bring student to real situations that can lead them to build knowledge and skills beyond self-studying. Teaching by experience is to explain the learning experience of the teacher to the students. This

learning is imparted by teacher to students through demonstrating his knowledge in doing academic activities (Sidabutar, 2016).

**Classroom Management.** Classroom management is frequently conceptualized as a matter of control rather than as a dimension of curriculum, instruction, and overall classroom climate (Bueno, 2019). He identifies classroom management as the process of organizing and conducting a classroom to maximize learning by creating a learning environment that encourages positive social interaction, active engagement in learning and self-motivation. According to Rodriguez (2017), classroom management deals with identifying classroom problems and addresses suggestions for preventive strategies and practical solutions in response to the maintenance of the conducive learning environment for the students.

Barnuevo, and Hasegawa (2008) found out in their study that the students' perception on the classroom management of their Mathematics teacher is "often" observed in all the statements in her survey questions except for the one which state "commands respect from the students" which the students responded to be "always" observed. The statements which most students agreed to be "often" and not "always" observed are; "sustains students' interest in the lessons and class discussions", "starts learning activities on time", "is able to assist students in doing cooperative group tasks", "makes the students behave according to how they are expected to. "shows a great deal of patience towards the students", "establishes authority in the classroom effectively by making students obey rules set forth", and "comes to class early and leaves on time".

**Evaluation Skills.** The process of evaluating students includes any task students perform in order to demonstrate knowledge or ability in the subject area. The teacher should use as many instruments as possible on as many occasions as possible to ensure valid and reliable indicators of student progress and attainment. Singh and Padilla (2009) defined the purpose of evaluation as determining marks to be given based on the collected information from the students for evaluation is a process of making measurements and rendering judgment which also should be fair and realistic.

Ajai (2018) emphasized that the students' perception on the evaluation skills in the respective instructions of the subject teachers concerned is based upon the consideration on evaluating students' performance. These results indicate the positive impact peer tutoring, self-instruction, visual representation and systematic explicit instructions have on student academic achievement. Students involved in these methods also demonstrated improved cooperation skills with peers and an increased motivation to engage in mathematics learning.

In the study of Barnuevo and Hasegawa (2008) on Teacher's Instructional Competencies to the Students' Academic Performance, Don Bosco College, Canlubang, Laguna, it focused on the students' perception on the Evaluation Skills of their Mathematics teachers. The students responded "Always" in the items "Evaluates students' performances fairly by using adequate standard measures of evaluation. The rest of the items obtained verbal description of "Often" that illustrate the practice of the evaluation skills of their Math teachers. the overall description of the perception of the students of their Mathematics teachers in terms of the practice of adequate Evaluation Skills is "Often" for it obtained 3.44 grand mean with a standard deviation value of 0.731.

### Learners Related Factors

Learner's related factor is one of the important aspects in mathematics and it plays vital role in a teaching-learning process. Without learners' interest in the teaching-learning actives, there is no possibility to achieve knowledge in subject matter. Learners achievement depends on their needs, interests, practices and seriousness in subject matter (Acharya, 2017).

Bueno (2019) concluded that students' attitudes towards mathematics are very much related to their attitude towards problem solving in general. He added that negative attitudes should be overcome so that later in life, students would not suffer from poor problem-solving skills. He added that the students should enhance their confidence level and value for Mathematics. Students should also continue high regards to their teachers, motivation and enjoyment towards teaching the subject to lessen their anxieties in Mathematics. Education Matters (2008) pointed out that students' commitment in mathematics refers to students' motivation to learn mathematics, their confidence in their ability to succeed and their emotions about mathematics. Students' commitment in mathematics plays a key role in acquisition of math skills and knowledge.

Balbosa (2010) revealed in her study "Factors Affecting Mathematics Performance of Laboratory High School Students at Laguna State Polytechnic University, 2009-2010" that the learners themselves gained an "often" result with an overall weighted mean of 3.60 which means that the learners often interested in the mathematics subject.

**Interest.** Interest is a feeling that accompanies or causes special object, and can be regarded as a caring, positive feeling, or prefer the pure flavour comes from the heart about something. It is a form of engagement, fun, and entered wholeheartedly an activity or topic.

Illiyas (2017) suggested from the findings that interest in Mathematics and academic achievement of high school level students should be motivated and made genius in the schools for success of the effective classroom. Mathematics interest is a complex behavioral aspect of mathematics. He added that the students who were high approval seekers had significantly greater achievement than the students who were low approval seekers. Academic achievement of students of the urban schools was significantly higher than that of students of the rural schools. The key strategy of mathematics teaching should focus on keeping the students interest on mathematics. If the learners are interested in the learning mathematics that should be helpful, their academic achievement and teachers' tasks become easier (Illiyas, M 2017).

The study of Balbosa (2010) revealed into the relationship between the teachers' instructional competence and students' performance of Mathematics Performance of Laboratory High School Students at Laguna State Polytechnic University during the school year 2009-2010. Through the test of significance, the researcher came up with the following conclusion; there is no significant correlation between student's interest in mathematics and their performance in mathematics. In the course of the study revealed that the students over-all weighted mean of interest in mathematics are "often" interested in this subject.

**Study Habits.** The study habits are too numerous to the benefits of students in general. A good study habit helps a student to be academically oriented. But student with good study habit, and are with negative self-conception of their ability seldom succeed in school. There are so many ways of making a studying more enjoyable. It is just by getting on with important work. Once a student starts inculcating a good study habit, the student will automatically begin to associate it with the reward it brings. Another impact study habit on student is that it gives cue, to what to do at a certain point in time. (Churcher, Asiedu, Boniface 2016).

Kamamia, Ngugi and Thinguri (2014) concluded in their study that teaching is designed as part of teachers training aimed at developing competence and confidence of a teacher in handling learners in the classroom. Other than mastering the subject content, student teachers are exposed to the methods and skills of instruction for student teachers' effectiveness and quality teaching during the teaching practice. Effective teachers understand how students learn and how students need to be taught. Researchers postulate that professional development is a factor that relate to teacher's quality teaching and that professional development improves pedagogy skills in teachers by providing them with the opportunities to practice new strategies in teaching practice

### **Academic Performance**

Jarvis (2006) mentioned that the outcome of the teaching process had to be measurable so that the emphasis on behaviorism, as learning is defined as what students can actually do when they have finished a course of study obtaining a change of behavior after an experience (Central New Mexico Foundation, 2010), reflected the objectives set. If teachers could understand how the learning process occurred, they could endeavor to ensure that their activity was efficient and achieved the predetermined outcome.

Academic Performance is the level or extent of attainment of the learner on a selected curricular subject or goal. This is commonly measured by examinations or other forms of assessments such as quizzes, long tests and other related means. In this study this pertains to the scores of the pupils as a result of their performance test and can be categorized into 5 levels of descriptors as indicated in the DepEd Order No. 8, s. 2015 namely: Outstanding, Very Satisfactory, Satisfactory, Fairly Satisfactory and Did Not Meet Expectations.

Balbosa (2010), revealed in her study that the mean performance of learners in Mathematics was satisfactory with an average of 88.23 and standard deviation of 4.84 which reveals that several of the students really wanted the subject of Mathematics. Idowu (2009) stated in his study that the subject that affects all aspects of



human life at different degrees. The importance of Mathematics in day-to-day activities is no longer news, however what remains new is the fact that learners performance in mathematics has not improved significantly despite its importance, not even with the introduction and use of technology in mathematics.

### **Mathematics Teachers Instructional**

#### **Competence and Academic Performance**

A study was conducted by Hamdan, Ghafar and Hwa Li (2010) on the teaching competency and dominant characteristics of 309 teachers from different secondary and primary schools in Johor Bahru. Their competencies are determined through teaching skills, concern for Johor Bahru, concern for students and concern for self, forming a comprehensive and practical model of teachers' competency characteristics. The result showed that all teachers are competent, and there are significant relationships between teaching competency and gender, specializations, and academic achievement

Balbosa (2010) in his study, it revealed that Personality traits had an average weighted mean of 4.50 and interpreted as "always." Teaching skills had an average weighted mean of 4.41 and interpreted as "often." Instructional materials had an average weighted mean of 2.98 and interpreted as "sometimes." In terms of the level of performance of the students in Mathematics, the students obtained the mean grade of 88.23 with verbal interpretation of "Satisfactory" and standard deviation of 4.84. Through the test of significance, the researcher concludes that there is no significant relationship between teacher-related factors, which are of personality traits, teaching skills and instructional materials and the performance of the students in mathematics.

Barnuevo, & Hasegawa (2008) pointed out that the Instructional Competencies and the Grade in the corresponding subject has significant correlation at 0.01 level or 0.05. The overall correlations made were interpreted as negligible correlations. Thus, the null hypothesis, "There is no significant relationship between the teachers' instructional competencies and the students' academic performances in English, Science and Technology and Mathematics," is accepted.

### **Learner-Related Factors and**

#### **Academic performance**

Statistically, Aysun (2017) revealed in his study that there was no significant difference in attitude towards mathematics according to the grade level. It can be said that mathematics is an important lesson in our country, at every grade level, and at the university entrance examination. The causes can be investigated. In his study, as the class level increased, the attitude score towards mathematics increased, while in some studies (Yenilmez & Özabacı, 2003) the attitude score decreased as the class level increased. Balbosa (2010) concluded in her research that there is no significance correlation between student interest in mathematics and their performance in mathematics with the computed z-value of 0.54 which is less than the tabular z-value of 2.10 at  $\alpha=0.05$ .

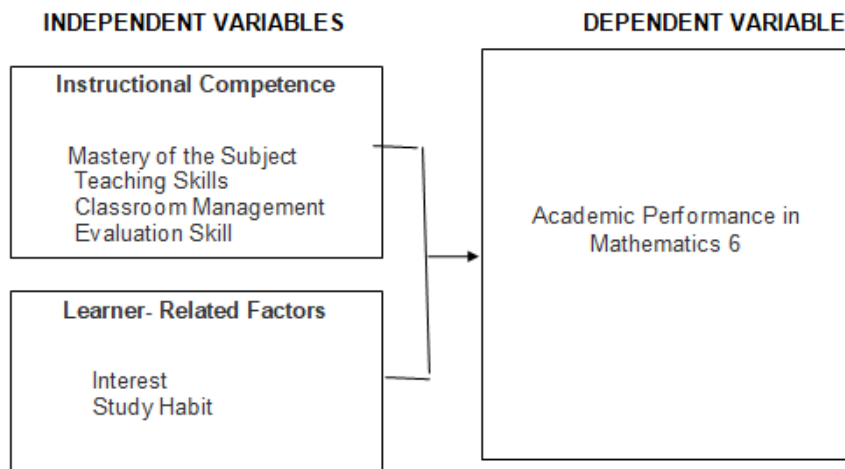
### **Theoretical Framework**

Vygotsky highlighted that interaction plays a role in the cognitive development of a learner (Dahms et al., 2007). In the light of the theory discussed, More Knowledgeable Others (MKO) refers to anyone who has a better understanding or a higher ability than the learner with respect to a particular task, process, or concept. In this study, MKO refers to the teachers who has a better understanding or level than the learner. Another theory linked in this study was based on Albert Bandura's social learning theory (1977) which asserts that all learning is acquired as a result of direct experience with the object, subject, thing, issue or an idea. According to Bandura, people interact with their environment that shapes the behavior of individual and vice versa.

In this light, the learner determines the behaviors to adopt and which others to reject without necessary engaging in the others behavior i.e. through observation. Individual behavior decisions and perceptions determine also the extent to which one will persist in any task which results in either success or a failure of the tasks to be accomplished.

### **Conceptual Framework**

This section dealt with the relationship among the three variables reflected in the conceptual framework. The independent variables of the study are Mathematics Teachers Instructional Competence and Learners-Related Factors, and the dependent variable is Academic Achievement in Mathematics 6.



### III. METHODOLOGY

#### Research Design

This quantitative study used the descriptive-correlation method. This research design was used to answer questions on relationships within measurable variables with an intention to explain, predict and control a phenomenon. Furthermore, Fur (2006) stated that this deals with numbers and anything that is measurable in a systematic way of investigation of phenomena and their relationships.

With this, the design utilized a descriptive-correlation method in measuring the relationships of mathematics teachers' instructional competence, learner-related factors to the academic achievement of learners in Mathematics 6. The correlational research investigates one or more characteristics of a group to discover the extent to which the characteristics vary together. Descriptive and correlational studies examine variables in their natural environments and do not include researcher-imposed treatments (Simon, 2011).

#### Research Locale

The study was conducted in five elementary schools in the District of Jose Abad Santos I, Municipality of Jose Abad Santos, Province of Davao Occidental. These schools were selected through random sampling. The municipality of Jose Abad Santos in Davao Occidental is divided into two districts namely; Jose Abad Santos I (JAS I) District and Jose Abad Santos II (JAS II) District. The Jose Abad Santos I District has 18 schools.

#### Research Respondents

The respondents of this study were the 300 Grade 6 learners of the five elementary schools in Jose Abad Santos 1 District for the school year 2019-2020. The schools were School A, School B, School C, School D, and School E. Out of the 533 grade six pupils currently enrolled in the five public elementary schools of JAS 1 district, 300 were selected through proportionate stratified random sampling. The sample obtained through systematic random sampling with proportionate allocation by means of lottery. These schools were selected because of their different learning culture and environment as these schools include learners with different locations, IP group, and spoke different dialects.

#### Research Instruments

The adopted instrument used in this study were the instruments on Instructional competence of Mathematics teachers and the Learners-related factors. The questionnaire on Instructional Competence has the indicators mastery of the subject, teaching skills, classroom management and evaluation skills. Each of these indicators has ten-item description with the total of 40 items of Likert type rating scale. This instrument was adopted from Instructional Competencies to the Students' Academic Performance of R. J. Barnuevo, K. Hasegawa and E. Hugo of Don Bosco College on 2008. As for the reliability of the instruments for the questionnaire used for the high school students in evaluating the teachers' competencies, pilot testing and reliability testing were conducted. The pilot testing had a very high reliability with the overall Cronbach's alpha value of 0.956.

The questionnaire on Learners-Related Factors has the indicators interest and study habits. It has a total of 15 items. This instrument was adapted from researcher-made questionnaire on Factors affecting Mathematics

performance of Laboratory High School Students at Laguna State Polytechnique University (2009-2010) to measure the level of Learners-Related Factors in terms of Interests and Study Habits.

#### Data Collection

**Seeking Permission to Conduct the Study.** The researcher sought the permission of the Dean of Graduate School of the University of the Immaculate Conception to conduct the study then it goes down through the scrutiny and approval of the Research Ethics Committee (UIC-REC). Once the researcher obtained the approval of the dean, the approval from the Schools Division Superintendent of the Division of Davao Occidental to conduct the study to the five identified public schools' was secured through a letter of permission, lastly the approval of the School heads to conduct the study in their respective school was secured too.

**Administration and Retrieval of the Questionnaires.** Upon the approval of Schools Division Superintendent. The researcher distributed the questionnaires to the learners-respondents who were chosen through complete proportional stratified random sampling method. The questionnaires given to the respondents who were present at the time of distribution. The researcher gave instructions to the respondents and allowed them to ask questions if they did not understand the items.

The data of the academic achievement of pupils were taken from the general average of academic grades of the respondents from first to third grading periods. Learners' grades in Mathematics were tabulated with utmost confidentiality.

**Checking, Collating and Processing of Data.** The researcher gathered the data, tallied, tabulated and analyzed them. The results were submitted to the statistician for computation and were interpreted by the researcher, which was discussed in the next chapter.

#### Statistical Tools

The researcher utilized the **mean, Pearson r, and standard deviation** to treat the data. Mean and standard deviation were used to determine the level of mathematics teachers' competence, learner-related factors, and academic performance in Mathematics 6; and, Pearson r was utilized to determine the significant relationship between mathematics teachers' competence, learner-related factors, and academic performance in Mathematics 6.

The research will be conducted with the utmost consideration of ethical standards to maintain respect and protection of the dignity and rights of the respondents in this study. This section discusses the relevant aspects that were considered to guarantee the appropriateness of the research protocols and the study itself which was reviewed by the Ethics Review Committee.

## IV. RESULTS AND DISCUSSION

### Level of Mathematics Teachers' Instructional Competence

Table 1 shows the level of Mathematics teachers' instructional competence in terms of mastery of the subject matter, teaching skills, classroom management, and evaluation skills. The overall results revealed that the Mathematics teachers have very high level of instructional competence with the mean of 4.34. In addition, the overall standard deviation result is 0.46 which is very minimal denoting that the respondents have ratings that are practically almost the same. The very high result agrees to the study of Lucero (2018) which stated that the level of instructional practices of teachers obtained an overall mean of 4.60 or very extensive. This means that the provision relating to instructional practices of teachers is very evident. Tan (2018) suggested in her study that teachers should be able to convey ideas simply and clearly, prepare the subject matters as well as possible, conduct good communication that can stimulate two ways communication. In addition, lecturers engage students to participate in the classroom. Three among the four categories got a description of very high, proving that they contributed the most to the level of mathematics teachers' instructional competence.



**Table 1:** Level of Instructional Competence of Mathematics Teachers

| My teacher is...  | Mean | Standard Deviation | Description |
|---|------|--------------------|-------------|
| <b>Mastery of the subject</b>   |      |                    |             |
| Manifesting confidence and firmness with ever information being given in the class                            | 4.77 | 0.64               | Very high   |
| Emphasizing difficult parts of the lesson easy to understand  | 4.50 | 0.81               | Very high   |
| Explaining the lesson by citing relevant examples and situations.   | 4.54 | 0.94               | Very high   |
| Readily defining important terms in the lesson.   | 4.64 | 0.81               | Very high   |
| Relating subject matter to previous topics and areas of interest.   | 4.40 | 0.88               | Very high   |
| Is able to relate lessons to other subjects.  | 3.80 | 1.29               | High        |
| Answering questions clearly with confidence.  | 4.27 | 1.11               | Very high   |
| Citing current and timely information on the subject.   | 4.31 | 0.99               | Very high   |
| Showing a full grasp of the lesson taught each day.   | 4.67 | 0.79               | Very high   |
| Reflecting mastery of the entire subject he she teaches.  | 4.47 | 0.94               | Very high   |
| <b>Category Mean</b>  | 4.44 | 0.48               | Very high   |
| <b>Teaching skills</b>  |      |                    |             |
| Organizing and presents subject matter clearly and coherently.  | 4.59 | 0.79               | Very high   |
| Presenting the lesson systematically and analytically.  | 4.42 | 0.97               | Very high   |
| Using language effectively in expressing ideas in class discussions.  | 4.59 | 0.79               | Very high   |
| Encouraging the students to think and clarify lessons through effective questioning towards the students.     | 4.43 | 1.00               | Very high   |
| Adjusting teaching methods to students' needs, interest and abilities.  | 4.53 | 0.81               | Very high   |
| Using different teaching techniques, approaches and strategies to make the lesson interesting and meaningful. | 4.49 | 0.92               | Very high   |
| Relating lesson to the existing conditions and real life situation convincingly.                              | 4.17 | 0.99               | High        |

|  |      |      |           |
|--|------|------|-----------|
| Utilizing instructional materials that sustains students' attention in achieving teaching objectives.    | 4.18 | 1.15 | High      |
| utilizing activities that are helpful for students to understand the lesson.                             | 4.46 | 0.94 | Very high |
| Motivating the students by asking questions effectively to develop critical thinking and creativity      | 4.44 | 0.95 | Very high |
| <b>Category Mean</b>   | 4.43 | 0.52 | Very high |
| <b>Classroom Management</b>  |      |      |           |
| Commanding respect from the students.  | 4.39 | 1.02 | Very high |
| Showing a great deal of patience towards the students.   | 4.46 | 0.88 | Very high |
| Starting learning activities on time.  | 4.33 | 0.92 | Very high |
| Coming to class early and leaves on time.  | 4.09 | 1.09 | High      |
| Making every moment in class active promoting fun about learning   | 4.50 | 0.84 | Very high |
| Sustaining students' interest in the lessons and class discussion.                                       | 4.28 | 1.04 | Very high |
| Establishing authority in the classroom effectively by making students obey rules set forth.             | 4.22 | 1.12 | Very high |
| Helping the class achieve the objectives set for the day   | 4.35 | 0.99 | Very high |
| Makes the students behave according to how they are expected to  | 4.22 | 1.00 | Very high |
| Assisting students in doing cooperative group tasks.   | 4.14 | 1.30 | High      |
| <b>Category Mean</b>   | 4.30 | 0.59 | Very high |
| <b>Evaluation skills</b>   |      |      |           |
| Evaluating students' performances fairly and uses adequate and accurate standard measures of evaluation. | 3.91 | 1.34 | High      |
| Providing evaluative activities appropriate to students' abilities, interests and needs.                 | 4.27 | 1.07 | Very high |
| Giving evaluation results and ratings that are well-accepted by the students                             | 4.22 | 1.12 | Very high |
| Utilizing evaluation result as a basis for improving instruction.  | 4.32 | 1.05 | Very high |

|  |      |      |           |
|--|------|------|-----------|
| Using different methods in evaluating students' learning aligned to the learning objectives such as oral performance, project, hands-on and etc. | 4.44 | 0.92 | Very high |
| Including items in the tests that are based on the lesson objectives consisted with actual discussions, activities and classroom interactions.   | 4.43 | 0.91 | Very high |
| Giving grades on the basis of students' actual performance.  | 4.42 | 0.92 | Very high |
| Treating each student fairly in giving grades.   | 4.22 | 1.15 | Very high |
| Bases ratings according to the objectives of the lessons and criteria set in class.  | 4.25 | 1.10 | Very high |
| Allowing students to rate their own performances in some of the activities in the class  | 3.49 | 1.64 | High      |
| <b>Category Mean</b>   | 4.19 | 0.59 | High      |
| <b>Overall Instructional Competence</b>  | 4.34 | 0.46 | Very high |

**Level of Learner-Related Factors**

Table 2 shows the level of learner-related factors. The overall result revealed that the Grade Six learners have a high level of favorable practices towards the academic performance in Mathematics with the mean of 3.83. Also, the overall standard deviation of 0.69 means that the ratings given by the respondents were closer to the category mean which denotes that the learners are favorable of the results as they rated themselves with regards to their attitude towards Mathematics. This high result is almost similar with the study of Balbosa (2010) that the learners themselves gained an “often” result with an overall weighted mean of 3.60 which means that the learners often interested in the mathematics subject. Bueno (2019) suggested that learners should enhance their confidence level and value for Mathematics.

Both interest and study habits contributed to the high level of learner related factors. However, between the two, Interest in Mathematics contributed more with category mean of 3.96 which implies that the learners' manifestation of related factors are favorable. The learners agreed that they want to get good grades as reflected by the highest mean of 4.37 which described that the learners' manifestation of related factors is very favorable. Meanwhile, the lowest mean in terms of interest is the learners actively participate in the class discussion, answering exercises, and/or clarifying things they did not understand which has a mean of 3.83 which implied that the learners are favorable and agreed that they are actively participate and cooperate in the class discussions.

**Table 2:** Level of Learner-Related Factors

|  | Mean | Standard Deviation | Description |
|--|------|--------------------|-------------|
| <b>Interest</b>  |      |                    |             |
| I am making myself prepared for the math subject.            | 4.03 | 1.05               | high        |
| I am listening attentively to the lecture of my math Teacher | 4.21 | 0.94               | Very high   |

|   |      |      |           |
|---|------|------|-----------|
| I am actively participating in the discussion, answering exercises and/or clarifying things I did not understand. | 3.83 | 1.12 | high      |
| I am wanting to get good grades on tests, quizzes, assignment and projects.                                       | 4.37 | 1.01 | Very high |
| I am getting frustrated when the discussion is interrupted or the teachers is absent                              | 3.35 | 1.47 | high      |
| <b>Category Mean</b>  | 3.96 | 0.67 | high      |
| <b>Study habits</b>   |      |      |           |
| I am doing my assignments regularly   | 3.83 | 1.05 | high      |
| I am exerting more effort when I do difficult assignments.  | 3.65 | 1.20 | high      |
| I am spending my vacant time in doing assignments or studying my lessons.   | 3.57 | 1.42 | high      |
| I am studying the lessons that I missed if I fail to report to class.   | 3.75 | 1.26 | high      |
| I am studying and prepare for quizzes and tests.  | 3.98 | 1.23 | high      |
| I am studying harder to improve my performance when I get low grades  | 3.83 | 1.10 | high      |
| I am spending less time with my friends during school days to concentrate more on my studies.                     | 3.56 | 1.22 | high      |
| I prefer finishing my studying and my assignments first before watching any television.                           | 3.52 | 1.21 | high      |
| I am seeing to it that extracurricular activities do not hamper my studies.                                       | 3.68 | 1.20 | high      |
| I am having a specific place of study at home which I keep clean and orderly.                                     | 3.64 | 1.36 | high      |
| <b>Category Mean</b>  | 3.70 | 0.84 | high      |
| <b>Overall Learners-related Related Factor</b>  | 3.83 | 0.69 | high      |

Level of Academic Performance in Mathematics 6.

To measure the level of learners' academic achievement in Mathematics, they were assessed through the average of their grades from first quarter to third quarter, and the results are presented in table 3. The mean academic performance of the learners was moderate with an average mean of 81.43 which shows that the grade 6 learners got satisfactory grades in mathematics. This means that the grade 6 learners of Jose Abad Santos 1 District performed satisfactorily. In particular, out of 300 respondents, 135 or 45% learners belong to the 80-84 grading which shows that academic achievements in mathematics are satisfactory, and 6% learners got the average grade of 90-100 grading scale which shows that the academic achievements in mathematics of 18 learners are outstanding.

**Table 3:** Level of Academic Performance in Mathematics 6

| Grading Scale  | Frequency | Percent | Description |
|----------------|-----------|---------|-------------|
| 75-79          | 108       | 36.0    | Low         |
| 80-84          | 135       | 45.0    | Moderate    |
| 85-89          | 39        | 13.0    | High        |
| 90-100         | 18        | 6.0     | Very High   |
| Mean           |           | 81.43   | Moderate    |
| Std. Deviation |           | 4.22    |             |

The result validates the theory of Vygotsky, the Zone of Proximal Development, which cites the distance between a students’ ability to perform a task under adult guidance and/or with peer collaboration and student’s ability to solve the problem independently. Mathematics teachers need to explore the best teaching techniques to help improve the performance of the learners. This theory explained the instructional competence of Mathematics teachers and how their interaction with students bring about the latter’s learning Mathematics.

**The Relationship of the Mathematics Teachers Instructional Competence, Learner-Related actors to the Academic Performance of Learners in Mathematics 6.**

Presented in table 4 is the relationship of Mathematics teachers’ instructional competence and learner-related factors towards learners’ academic performance in Mathematics 6. the results revealed that the relationship of mathematics teachers’ instructional competence was positive, negligible strength and statistically not significant with the learner’ academic performance in mathematics 6, as can be gleaned in the p-value of 0.053 which is greater than 0.05 and correlation coefficient,  $r = 0.112$ . Only Classroom Management obtained negligible correlation and significant relationship with the Learners’ Academic Performance as these got the value of  $r .126$  and  $.029$  respectively which specify that the classroom management greatly affects the performance of the learners. Meanwhile, other indicators showed that there was no significant relationship between mastery of subject matter, teaching skills and, evaluation skills and academic performance of mathematics 6 as can be gleaned their p-value which is greater than 0.05.

**Table 4:** The Relationship of the Mathematics Teachers’ Instructional Competence and Learner-Related Factors to the Academic Performance of Mathematics

| Instructional Competence       | Pearson r with Academic Performance | Description          | p-value | Remarks         |
|--------------------------------|-------------------------------------|----------------------|---------|-----------------|
| Mastery of the subject         | 0.097                               | Negligible, positive | 0.093   | Not Significant |
| Teaching skills                | 0.077                               | Negligible, positive | 0.184   | Not Significant |
| Classroom Management           | 0.126                               | Negligible, positive | 0.029   | Significant     |
| Evaluation Skills              | 0.078                               | Negligible, positive | 0.177   | Not Significant |
| Overall Instruction Competence | 0.112                               | Negligible, positive | 0.053   | Not Significant |
| <b>Learner-related factors</b> |                                     |                      |         |                 |
| Interest                       | 0.068                               | Negligible, positive | 0.240   | Not Significant |



|                                 |        |                      |       |                 |
|---------------------------------|--------|----------------------|-------|-----------------|
| Study Habit                     | -0.006 | Negligible, negative | 0.915 | Not Significant |
| Overall Learner-related factors | 0.029  | Negligible, positive | 0.615 | Not Significant |

These findings support Balbosa (2010) in her study “Factors Affecting Mathematics Performance of Laboratory High School Students at Laguna State Polytechnic University, 2009-2010” that through the test of significance, the researcher concludes that there is no significant relationship between teacher-related factors that are of personality traits, teaching skills and instructional materials and the performance of the students in Mathematics.

### V. CONCLUSION

1. The level of Mathematics teachers’ instructional competence is very high. This means that the Mathematics Teachers are very competent in Instructional competence in the delivery of the lesson and mastery of subject matter are most exhibited by the Mathematics teachers.
2. The level of Learner-related factors is high. This means that the learners are favorable in terms of their attitudes towards Mathematics.
3. The majority of the learner with regards to their academic performance in Mathematics is satisfactory. A 135 learners out of 300 got the satisfactory grades while 18 learners got outstanding grades.
4. The relationship between the Mathematics teachers’ instructional competence and academic performance in Mathematics 6 is not significant. This study concluded that there is negligible positive correlation which means that the relationship of two variables move in the same directions. This implies that the increase in the Mathematics teachers’ competence would also increase the academic performance of grade 6 learners.
5. Similarly, the relationship between learner-related factors and academic performance have shown not to be significant. The study calculated as negligible positive correlation which shows that the relationship of two variables move in the same directions. This implies that the increase in the learner-related factors would also increase the academic performance of grade 6 learners.

### VI. RECOMMENDATIONS

Since the Mathematics teachers’ instructional competence is very high, then teachers may use the indicators of the teachers’ instructional competence as basis for improving the academic performance of the learners and ensuring effective teaching-learning process.

Since the learner-related factors is high. Learners gave a unifying perception on their level of interest and study habit in Mathematics. It is suggested from the findings that learner-related factors and academic achievement of grade 6 learners should be motivated and made highly proficient in the schools for success of the effective classroom.

The level of the respondents’ academic performance is found to be on the satisfactory as indicated in their obtained grades. The learners need to experience varied performance tasks that needs to be reinforced at home to maintain and improve their academic performance in Mathematics. Moreover, the students should train and be exposed to various problem-solving skills as a supportive technique to reinforce learning Mathematics so as to bring about a better teaching and learning process in the classroom

Further, since Mathematics teachers’ instructional competence and learner- related factors has no significant influence on academic performance, it is recommended that another study dealing with the poor performance in Mathematics of the learners shall be conducted.

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