Learners' Motivation and Academic Performance in Mathematics: A Literature Review

Lenie C. Valete[a]

Teacher III, Pamantingan Elementary School, Pamantingan, Eseperanza, Sultan Kudarat, Philippines

ABSTRACT: There are numerous explanations for why students perform poorly in mathematics classes. Researchers have identified a number of factors that contribute to poor academic performance in mathematics, including student attitudes toward the subject, a lack of teaching expertise, economic situations, an inability to apply effective teaching strategies, and teachers' low motivation. This study determined the level of learners' motivation and their academic performance in Mathematics at Esperanza District III. A descriptive correlational research design was utilized. The researcher utilized the twenty-eight (28) Mathematics teachers and 215 sample of Grade 5 learners as respondents. This study used the descriptive and inferential statistics like mean, frequency and percentage and Pearson r moment correlation. Findings revealed that the learners' motivation in terms of interest was rated high. The learners' motivation on relevance was also rated high. They have also high motivation when it comes to their confidence and satisfaction. Majority of the grade 5 learners has an outstanding performance in Mathematics. The academic performance of grade 5 learners is dependent to their learning motivation. The learners have high interest in learning mathematics, keeping their motivation intact. Interest is one of the learners' motivation that engaged them in learning while having fun. The relevance of motivation is anchored to the learning experiences of learners that gauge as effective to keep them engaged in the lesson. Grade 5 learners manifested high confidence in learning the subject because they are motivated to learn. This implies that being confident has the ability and capacity to surpass difficulties and challenges in learning Mathematics. That learners' satisfaction is linked to their academic performance that creates positive attitude and makes the learners more inclined to learn because of the support and quality teaching they received. Satisfaction comes from their fulfilment and happiness in learning mathematics. When learners are satisfied they have also high learning motivation. Almost of the grade 5 learners perform better in Mathematics because they are motivated to learn. The motivation of learners is a key for their improvement and because of the 2-year modular learning, they are excited to learn in the face to-face classes. The higher the learners' motivation to learn mathematics the higher they achieved towards their performance.

Keywords: Learners' Motivation, Academic Performance, Mathematics

Introduction

Mathematics education requires highly motivated students because it requires reasoning, making interpretations, and solving problems, mathematical issues, and concepts. The difficulties with learning mathematics in today's classrooms are that it demands disciplined study, concentration, and motivation.

Learners get the ability to distinguish between the proper applications of mathematical knowledge in various contexts through their study of the subject. Solving issues allows for the integration of mathematics value. These issues can include word problems, non-routine issues, and real-world issues that call for various techniques to solve them. When they can use the mathematics they are learning in real-world circumstances, students are more appreciative of and motivated to learn it. In order to help pupils overcome the problems of their lives, we should provide them with all the necessary abilities (Koon, 2016).

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-9, Issue-3, March 2023
ISSN: 2395-3470
www.ijseas.com

Motivation is an internal state that prompts, guides, and sustains behaviour. Learning and motivation are closely related to one another. Student motivation is important in mathematics education, and both internal and extrinsic motivating factors are linked to mathematical success. Academic performance is the sum of the learner's information gained from their learning. The learner develops information via the instructions they are given at school, which are structured around a number of fundamental activities where a teacher gives students tasks and assesses and compares the calibre of their work (Erhuvwu & Adeyemi, 2019).

Most people define motivation as the desire to attain goals and the mechanisms for sustaining that desire. An essential building block for completing cognitive behavior, such as planning, organizing, decision-making, learning, and assessments, is motivation (Doño & Mangila, 2021).

Moreover, learners' academic performance is frequently evaluated by comparing it to benchmarks or to that of others. The effectiveness of the educational system is determined by introducing the variables impacting academic accomplishment. In this view, motivation is a key element. It denotes the recognition of motivation as a crucial component of students' academic success. It is believed that motivation is a factor in how creatively students learn and how well they perform academically. Like in other subjects, motivation has a big impact on math lessons. Additionally, because motivation serves as a guide for pupils, it might aid them in anticipating the course of events and their outcome (Doño & Mangila, 2021).

When given the chance, motivated learners take the initiative and put extreme effort and concentration into carrying out learning tasks. They typically display positive emotions during ongoing action, such as enthusiasm, optimism, curiosity, and interest. Success in math has a significant impact on one's drive to succeed (Seifeddine, 2014).

The first component of motivation, interest, measures whether students' curiosity is piqued and whether their enthusiasm for learning persists over time. The extent to which the learner's curiosity has been piqued will play a significant role in this area. The learner's perception of how well teaching satisfies individual needs or objectives is referred to as relevance. It is driven by three motives: success, membership, and power. Confidence is a quality that is correlated with the learner's perception of his or her likelihood of success and degree of control over that success. Expectations of oneself are more self-directed and include learned helplessness, locus of control, and personal causality. A sense of accomplishment, praise from superiors, or simple entertainment can all lead to satisfaction. Learners will be motivated to learn when they are satisfied with the outcomes, and feedback and reinforcement are crucial components. It also describes the responses to extrinsic rewards and inner motives (Hutajulu et al., 2019).

Academic performance is a construct which can take qualitative or quantitative values which give an existence of approximation to the dimension and evidence of the profile of skills, knowledge, attitudes and values developed by the student in the teaching-learning process. Learning and mastery of mathematics can facilitate logical, analytical, critical, and abstract thinking among students. Mathematics offers fundamental skills such as thinking in life, establishing relationships between events, reasoning, estimating, problem-solving apart from gaining calculation skills and teaching numbers and mathematical operation (Siaw et al., 2021).

There several gaps in teaching mathematics and students' performance which prompting the researcher to conduct such study. One of the problems is mistakes such as number additions, substitutions, transpositions, omissions, and reversals in writing, reading, and recalling numbers, difficulty with abstract concepts of time and direction and inability to recall schedules and sequences of past or future events (Lateef & Sikiru, 2019).

There are numerous explanations for why students perform poorly in mathematics classes. Researchers have identified a number of factors that contribute to poor academic performance in mathematics, including student attitudes toward the subject, a lack of teaching expertise, economic situations, an inability to apply effective teaching strategies, and teachers' low motivation Varaidzai & Makondo, 2020).

The majority of teachers stated that mastering mathematics presents many difficulties for students who are slow learners. They do not consciously draw connections between what they already know and what they are learning. When faced with a problem-solving scenario,

these learners are unable to use techniques or existing information to resolve it. Because most mathematical concepts are hierarchical, students must expand on what they already know (Demir et al, 2017).

Moreover, it has been found that learners frequently arrive early or depart late. Results for addition, subtraction, multiplication, and division are inconsistent. Having trouble recalling arithmetic facts, concepts, rules, formulae, sequences, and processes; not being able to picture; coming off as distracted or unfocused; and inconsistent knowledge of math facts (Yarhands et al., 2022).

Research indicates that it is concerning that Filipinos are discovered to be poor in fundamental mathematics understanding. In addition to its significance, it has been noted that math in elementary schools is one of the subjects that is worst taught, most detested, and worst understood. The subject is avoided by the students. Due to societal perceptions that mathematics is difficult, a lack of qualified teachers, a lack of mathematics laboratories, and a lack of engaging and innovative teaching strategies, students often perform poorly (Obina et al., 2022).

The participation of the Philippines in TIMSS confirmed this deplorable condition-based from the report posted last 2013 that the performance of Filipino students in national and international surveys on mathematics competencies lag behind its neighbouring countries like Singapore, South Korea, Hongkong, Chinese Taipei and Japan. The Filipino students excel in knowledge acquisition but fare considerably low in lessons requiring higher order thinking skills (Guinocor et al., 2020).

Based on experiences and observation, learners have low performance in Mathematics. They perform poorly in basic numeracy such as multiplication and division of whole number. In continuity of face-to-face classes, learners poor understanding of the mathematical problems and suffer on learning loss during the off school.

The above situations were empirical evidences to conduct such study. The researcher will be motivated to conduct this study to determine the effect of their learning motivation to their academic performance. They have also poor in calculations and solving word problems. The capacity of the researcher to conduct the study on the learning motivation and academic performance answer on the research gaps and contribute as additional literature studies.

Literature Review

Motivation in Learning

Many studies have examined how students behave when learning different subjects, using different instructional styles, or utilizing different multimedia tools (Abeysekera & Dawson, 2015). Owning a successful learning approach is therefore essential to get great performance in learning. In order to assist learners, empirical research works to determine the best learning technique. Also, understanding student motivation levels and learning styles is essential for helping lecturers in higher education levels enhance their instruction.

The moderate level of motivation among potential teachers is moderately positively correlated with learning strategies like elaboration, rehearsal, organization, metacognitive self-regulation, and critical thinking; positively weakly correlated with peer-learning, help seeking, and time and study environment. The learning technique for effort management has a negative link with a moderate level of motivation in potential teachers. We therefore draw the conclusion that moderate motivation levels of prospective teachers are associated with organization, elaboration, rehearsal, metacognitive self-regulation, and critical thinking as learning strategies more so than help seeking, peer learning, and time and study environment, but not with effort regulation as a learning strategy (Rashid & Rana, 2019).

Implementing the curriculum effectively requires motivating the learner. This is due to the fact that motivation plays a significant role in teaching and learning circumstances. Whether or not learners are motivated determines how well they learn. Motivating students helps them achieve their learning objectives. Recognizing that encouraging learning is a key component of effective teaching is crucial. This suggests that the most crucial aspect of learning is probably the learners' motivation. As learning requires stretching the brain to its limits, it is difficult labor that can only be accomplished with incentive. While mere enrollment in the class is, of course, no guarantee that students desire to study, the motivation of pupils to learn

is particularly crucial. It just serves as a reminder to students that they live in a world where attendance at school is mandated. While uninterested students may learn little or nothing at all and generally find teaching difficult and irritating, highly motivated students are likely to learn quickly and make any class enjoyable. Teachers have a duty to make sure students are motivated to learn because modern education is required, therefore they cannot assume students will be. Instructors must influence students to desire to do the right thing (Filgona et al., 2020).

According to Tella's (2017) theory, students who are intrinsically motivated by their work exhibit a range of pedagogically desirable behaviors, including longer concentration spans, perseverance in the face of difficulties, more elaborate processing, monitoring of comprehension, choosing deeper, harder tasks, higher levels of creativity, taking risks, and more successful performance and learning techniques.

Motivation is the term used to describe the variety of internal and external factors that affect learners' actions, efforts, and interests toward their classes. In addition, motivation is the force that propels, maintains, and explains a person's path (Areepattamannil et. al., 2011). Motivation is one facet of learning that is challenging to measure. For instance, a group of pupils feels inspired to accomplish the lesson's tasks. It's likely that not all of them were as motivated by their tasks as they seemed to be. One of them might have been more driven than the others, or he or she might not have wanted to work on the project but yet have behaved in a way that seemed they were (Ergun, 2012).

Learning motivation is the desire to succeed or the need to do well, as shown by effort and perseverance in the face of difficulties. The urge to learn is believed to be one of the primary human motivations. Kids' behavior in classroom accomplishment scenarios is explained by a driving factor. On a cognitive, emotional, and behavioral level, it outlines how students interact with and contribute to the educational process in the field of education (Erhuvwu & Adeyimi, 2019).

The urge to accomplish goals is a definition of the process of retaining motivation. It provides an essential framework for other cognitive processes, such as task-oriented behavior and the capacity for organization, planning, decision-making, learning, and self-evaluation. It also entails benchmarking activities and assessing how well one does in comparison to others. (Muola, 2015) defines motivation as the urge to work hard and enthusiastically, too consistently move toward goals, to attain dominance in challenging tasks, and to feel accomplished as a result.

The secret to raising student achievement is figuring out how to encourage students effectively. One of the crucial elements that requires quick rectification is motivation. Based on that context, the goal of this study was to identify the types of learning media that students choose and their motivation levels for learning mathematics. Independent of learning objectives, increasing student motivation is a top priority for significant educational reform (Fuqoha et al., 2018).

Mathematics teachers can have an impact on students' motivation to learn mathematics in addition to the learners themselves. Heffernan et al. (2020) assert that because mathematics needs problem-solving abilities, children are motivated to pursue the subject if their teachers actively support them. They require a constant resource so they won't get lost when responding to the questions. This is a very important assistance that teachers should offer since, typically, when teachers are doing their jobs, pupils are enthusiastic to solve the problem until they ultimately feel confident that they can do it on their own.

According to Alzahrani (2022), the teachers' creative methods for teaching mathematics were another element that kept the students motivated. The metacognitive techniques employed help raise students' self-assurance in their abilities and eventually give them the impression that they can effectively regulate their learning. So, these abilities aid pupils in doing better in math classes.

Different fields' students have different reasons for wanting to learn mathematics. To increase the pupils' interest in and confidence in learning mathematics, the teachers must engage them from the start. Teachers should approach each discipline in accordance with its capabilities and offer ongoing support. If that occurs, students will become interested in that subject and become more motivated to perform well in Mathematics (Yunos et al., 2022).

Learners' Academic Performance

One of the many elements of academic achievement is academic performance. Academic achievement is influenced by a variety of variables, including socioeconomic position, student temperament and motivation, peer pressure, and family support. According to Farruggia et al. (2016), academic achievement necessitates having a strong academic mind-set. High academically motivated students continuously improve their accounting knowledge. This is crucial since academic performance is impacted by the presence of negative perceptions, which are known to make accounting courses boring (Kogler & Gollner, 2018).

Every educational institution has always been interested in the academic success of their students. Although there is agreement that schools should play a significant part in this process, there seems to be dispute over the specifics of that involvement. However some think that kids' academic development should be the main priority of schools. Arguably, academic instruction is the main purpose of education. Schools are intended to have an impact on students' learning, socialization, and even preparation for careers. Nonetheless, despite the focus on a broad definition of educational outcomes, academic performance continues to be crucial. The phrase "student academic performance" is commonly used in conversations about higher education. Academic performance is a multifaceted concept made up of a learner's abilities, attitudes, and behaviors that support academic achievement in the classroom (Hijazi & Naqvi, 2006).

Although the value of academic accomplishment is rarely contested, agreement on how to evaluate it has been difficult to come by. Policymakers, measurement specialists, and educators continue to disagree on how to quantify kids' academic success (Elliot, 2007; Johnson, 2003). Academic accomplishment has been measured in a variety of ways by researchers, including grades on report cards, grade point averages, standardized test results, teacher evaluations, scores on other cognitive tests, grade retention, and dropout rates (Burns & Darling, 2002). Yet, for the sake of this study, a student's academic success is determined by their capacity to complete a particular assignment in a classroom.

Statement of the Problem

This study determined the level of learners' motivation and their academic performance in Mathematics at Esperanza District III. Findings served as basis for the enhancing teachers' instructional proficiency. Specifically, it sought the answers to the following questions:

1. To what extent is the learners' motivation in terms of:
      1.1 Interest,
      1.2 Relevance,
      1.3 Confidence, and
      1.4 Satisfaction?

2. What is the level of academic performance of learners in Mathematics based on their final rating in first quarter?

3. Is there a relationship between the learners' motivation and their academic performance in Mathematics?

Research Design

A descriptive correlational research design was utilized in this research study. The researcher employed correlational research as the design because this study aimed to investigate the correlation between learners' motivation and academic performance in

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-9, Issue-3, March 2023
ISSN: 2395-3470
www.ijseas.com

Mathematics. According to Fraenkel and Wallen (2009), correlational research is a research which the goal is to find out the relationship between two or more variables and their cause and effect. It also describe that correlational research investigates for the relationship or correlation between variables in positive correlation or negative correlation, and the level of correlation is determined by the coefficient of correlation. It can be said that the detection of correlation among variables is based on its correlation coefficient (Creswell, 2012).

This research design underlies three premises in gathering necessary data. First, information for the relevant variables involve will be collected, averaged, and synthesized. Second, after determining the mean score for each variable, the extent to which the sub-indicators scores using the set criteria for each variable will be determined. Third, inferential statistics will be utilized to determine the relationship between the level of learners' motivation and their academic performance in Mathematics.

Initially, this study the researcher utilized the twenty-eight (28) Mathematics teachers in Esperanza District III. They were asked to assess the level of learners' motivation. This group of teachers are teaching Mathematics in Grade 5 level. The researcher also employed the 215 sample of Grade 5 learners to determine their academic performance during the first grading period.

The study was conducted in Esperanza District III for the school year 2022-2023. All schools were included as the locale of the study. The majority of the schools were located in the far-flung areas of Esperanza. The schools are very far from each other and it could reach through motorcycle and by means of walking.

The researcher utilized the complete enumeration sampling technique to determine the teacher-respondents of the study. According to Kulshreshtha (2013) total population sampling is a type of purposive sampling strategy that entails analysing the entire population or the total population that possesses a given set of qualities, including specific attributes or traits, experience, knowledge, skills, exposure to an event, etc. Despite the fact that complete population sampling is rarely employed, there are several forms of research where it can be highly helpful.

A research instrument used in this study was adapted and modified based on the study of Doño and Mangila (2021). The research tool has four sub parts that includes interest, relevance, confidence and satisfaction. Each sub part has five or six statements. A 5-point Likert-type scale that measures the degree of agreement with the statement: (5) Very High (4) High, (3) Moderately High, (2) Low and (1) Very Low.

The checklist form solicited information about the academic performance of the learners in Mathematics to be measured through the final rating in the first quarter of the School Year 2022-2023. The teachers indicated the rating of per learner in every class. The academic performance was analyzed and interpreted using the scale as stipulated in DepEd Order No 8, s. 2015.

To ensure that the instrument measured what it intends to measure, validity test was conducted. A group of experts were consulted to look into the content and relevance. Content validity was used to check the construction of the items.

The research instruments were validated by three (3) experts who are acknowledged authorities in educational management and test construction. Item (I-CVI) and scale content

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-9, Issue-3, March 2023
ISSN: 2395-3470
www.ijseas.com

validation (S-CVI) indices were computed. The researcher used an acceptable CVI of 0.83 (Robles, 2019).

On the other hand, internal consistency method was used to determine the reliability of the instrument. Creswell (2018) noted that reliability is the degree to which research method produces stable and consistent results. A specific measure is considered reliable if its application on the same object of measurement number of times produces the same results. In this study, the Cronbach alpha was computed to determine for this purpose.

Discussion of Results and Reflection

This section dealt with the presentation, analysis, and interpretation of data taking consideration on the research questions which sought to answer the main problem of the research. The data were sequentially presented below in the form of tables for the systematic and comprehensive analysis.

Learners' Motivation

Table 1 presents the extent of learners' motivation in terms of interest. As shown, my learners love learning mathematics was obtained the highest rating with mean of 4.20. This followed by, the indicator about learners learned a lot in Mathematics with mean of 4.03. On the contrary, learning mathematics is not frustrating to them and the hours they spend doing mathematics are the ones they enjoy most were obtained the lower means of 4.00 and described as high.

Taken as a whole, the mean of interest was 4.05 and rated as high. This means that the learners have high interest in learning mathematics, keeping their motivation intact. Furthermore, interest is one of the learners' motivation that engaged them in learning while having fun.

Table 2 presents the extent of learners' motivation in terms of relevance. As shown, my learners find activities in mathematics lessons meaningful was rated very high with highest mean of 4.40. This followed by the indicator on the learners' aspire to study Mathematics after learning the basic skills with mean of 4.35. On the contrary, Mathematics gives them opportunities for choice, responsibility, and interpersonal influence was rated high with lower mean of 3.87.

When taken as a whole, the overall man of relevance was 4.11 described as high. This means that the lesson in Mathematics is highly relevant to the needs of the learners. The implication of the findings stated that relevance of motivation is anchored to the learning experiences of learners that gauge as effective to keep them engaged in the lesson.

Table 3 presents the extent of learners' motivation in terms of confidence. As shown, my learners are expected to be successful in mathematical tasks given by teachers in mathematics classrooms obtained the highest mean of 3.89, described as high. This followed by, my learners are expected to be able to apply mathematics in life situations with mean of 3.58. On the opposing side, my learners can work independently in mathematics exercises in and outside mathematics classrooms was rated the lowest with mean of 3.45 rated as high.

When taken as a whole, the mean of confidence was 3.61 described as high. This means that the Grade 5 learners manifested high confidence in learning the subject because they are motivated to learn. This implies that being confident has the ability and capacity to

International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-9, Issue-3, March 2023
ISSN: 2395-3470
www.ijseas.com

surpass difficulties and challenges in learning Mathematics.

Table 4 presents the extent of learners' motivation in terms of satisfaction. As shown, my learners are satisfied with the way mathematics was taught in mathematics classrooms was rated high with mean of 3.89. This followed by learning mathematics is in itself rewarding for them was also rated high with mean 3.80. On the opposing side, my learners feel easy during mathematics lessons was rated moderate which obtained the lower mean of 3.20.

When taken as a whole, the mean of satisfaction was 3.65 described as high. This means that the grade 5 learners have high satisfaction keeping them motivated in learning Mathematics. The result implies that learners' satisfaction is linked to their academic performance that creates positive attitude and makes the learners more inclined to learn because of the support and quality teaching they received. Satisfaction comes from their fulfilment and happiness in learning mathematics. When learners are satisfied they have also high learning motivation.

Learners Academic Performance

Table 5 shows the level of academic performance of grade 5 learners in mathematics. The result reveals that majority of the grade 5 learners has an outstanding performance in Mathematics with 43% (96 out of 215 samples). Moreover, 50 and 60 learners (110 out 0f 215 samples) have very satisfactory and satisfactory rating. This means that almost of the grade 5 learners perform better in Mathematics because they are motivated to learn. The motivation of learners is a key for their improvement and because of the 2-year modular learning, they are excited to learn in the face to-face classes.

Relationship between the Grade 5 Learners' Motivation and their Academic Performance in Mathematics

As shown, on the analysis of the learners' motivation and the academic performance shows a significant relationship (t-comp. =7.093, t-crit. = 0.275, p-value=0.019<0.05), thus null hypothesis was rejected. This means that the academic performance of grade 5 learners is dependent to their learning motivation. The result implies that higher the learners' motivation to learn mathematics the higher they achieved towards their performance.

Conclusion

The learners have high interest in learning mathematics, keeping their motivation intact. Interest is one of the learners' motivation that engaged them in learning while having fun. The relevance of motivation is anchored to the learning experiences of learners that gauge as effective to keep them engaged in the lesson. Grade 5 learners manifested high confidence in learning the subject because they are motivated to learn. This implies that being confident has the ability and capacity to surpass difficulties and challenges in learning Mathematics. That learners' satisfaction is linked to their academic performance that creates positive attitude and makes the learners more inclined to learn because of the support and quality teaching they received. Satisfaction comes from their fulfilment and happiness in learning mathematics. When learners are satisfied they have also high learning motivation.

Almost of the grade 5 learners perform better in Mathematics because they are motivated to learn. The motivation of learners is a key for their improvement and because of

the 2-year modular learning, they are excited to learn in the face to-face classes. The higher the learners' motivation to learn mathematics the higher they achieved towards their performance.

Recommendation

1. School must organize intervention to sustain the learning motivation of the learners like parent-teacher partnership, parent-lead support for homework and financial donations.

2. Learners must improve their academic performance to reach the outstanding performance.

3. Learning support must be given to the learners to improve their learning motivation.

References

Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: Definition rationale and a call for research. Higher Education Research & Development, 34(1), 1–14.

Alzahrani, K. S. (2022). Away from the textbook, metacognitive strategies in mathematics: A qualitative study on saudi students' motivation to learn mathematics. EURASIA Journal of Mathematics, Science and Technology Education, 18(1), 2070. https://doi.org/ 10.29333/ejmste/11507

Areepattamannil, S., Freeman, J., & Klinger, D. (2011). Intrinsic motivation, extrinsic motivation, and academic achievement among Indian adolescents in Canada and India. Social Psychology of Education, 14(3), 1–13.

Arthur, Y. D., Dogbe, C. S. K., & Asiedu-Addo, S. K. (2022). Enhancing performance in mathematics through motivation, peer assisted learning, and teaching quality: The mediating role of student interest. EURASIA Journal of Mathematics, Science and Technology Education, 18(2), em2072.

Burns, A., & Darling, N. (2002). Peer pressure is not peer influence. The Education Digest, 68, 4-6.

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.). Boston, MA: Pearson.

Creswell, J. W., & Creswell, J. D. (2018). Research design: qualitative, quantitative, and mixed methods approaches. Fifth edition. Los Angeles, SAGE.

Demir, S., Kılınç, M., & Doğan, A. (2017). The effect of curriculum for developing efficient studying skills on academic achievements and studying skills of learners. International Electronic Journal of ElementaryEducation,4(3),427-440. http://bit.ly/2IoPSPb

DepEd Order No. 8. (2015 April 3). DepEd guidelines on classroom assessment for the k to 12 basic education program. https://www. teacherph. com/ classroom-assessment/

Doño, M. J. A., & Mangila, B. B. (2021). Mathematics teacher's engagement and students' motivation to learn mathematics. Infinity, 10(2), 285- 300. https://www.researchgate.net/publication/355356641

Elliot, A. (2007). A conceptual history of the achievement goal construct. In A. Elliot & C. Dweck (Eds.), Handbook of competence and motivation (pp.52-72). New York: Guilford Press.

Ergun, D. (2012). Motivation of students towards mathematics in trade vocational high schools in Ankara: An Exploratory Study (Doctoral dissertation, Bilkent Universitesi (Turkey)

Erhuvwu, O. S., & Adeyemi, F. T. (2019). Achievement Motivation as a Predictor of Academic Achievement of Senior Secondary School Student in Mathematics. European Journal of Educational and Development Psychology, 7(3), 36-45.

Farruggia, S. P., Han, C., Watson, L., Moss, T. P., & Bottoms, B. L. (2016). No cognitive factors and college student success. Journal of College Student Retention: Research, Theory & Practice, 20(3), 308–327. https://doi.org/10.1177/ 1521025116666539

Filgona, J., Sakiyo, J., Gwany, D. M., & Okoronka, A. U. Asian Journal of Education and Social Studies.

Fraenkel,J.R & Wallen, N.E (2009). How to Design and Evaluate Research in Education (7th ed). New York. McGraw-hill

Fuqoha, A. A. N., Budiyono, B., & Indriati, D. (2018). Motivation in mathematics learning. Pancaran Pendidikan, 7(1). http://www. pancaranpendidikan.or.id/

George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon.

Guinocor, M., Almerino, P., Mamites, I., Lumayag, C., Villaganas, M. A., & Capuyan, M. (2020). Mathematics performance of students in a Philippine State University. International Electronic Journal of Mathematics Education, 15(3), em0586.

Hijazi, S. T., & Naqvi, S. M. M. R. (2006). Factors affecting students' performance: A case of private colleges'. Bangladesh E-Journal of Sociology, 3 (1), 65-99.

Hutajulu, M., Wijaya, T. T., & Hidayat, W. (2019). The effect of mathematical disposition and learning motivation on problem solving: an analysis. Infinity Journal, 8(2), 229-238. https://doi.org/10.22460/ infinity.v8i2.p229-238

Johnson, V. E. (2003). Grade inflation: A crisis in college education. New York, NY: SpringerVerlag.

Karaba, M. W., Gitumu, M. and Mwaruvie, J. (2019). Effect of School Feeding Programme on ECDE Pupils' Class Participation in Kenya. Pedagogical Research, 4(1), em0029. https://doi.org/10.29333/pr/5744

Kogler, K., & Gollner, R. (2018). Control-value appraisals predicting students' boredom in accounting classes: A continuous-state- sampling approach. Empirical Research in Vocational Education and Training, 10(4), 1–16. https://doi.org/10.1186/s40461- 018-0065-8

Koon, A. N. W. (2016). Case study: Factors influencing student's motivation in learning mufy mathematics unit 2. Journal of Education and Social Sciences, 4(11), 72-82. https://www.jesoc.com/wp-content/uploads/2016/08/Edu-64.pdf

Kulshreshtha, A. C. (2013). Basic Concepts of Sampling-Brief Review; Sampling Frame.https://www.unsiap.or.jp/e- learning/el_material/

Muola, J.M. (2015). Astudy of the relationship between academic achievement, motivation and environment among standard eight pupils. Educational Research and reviews 5(5), 213- 217.

Obina, J. E., Gabe, J. B., Angcon, S. M. D., Diaz, B. T. R., Largo, V. J. Y., Chiva, M. C., & Bolaňos, J. G. (2022). Math apps utilization: its perceived effects to the academic performance of mathematics major students. European Journal of Education Studies, 9(9).

Rashid, S., & Rana, R. A. (2019). Relationship between the Levels of Motivation and Learning Strategies of Prospective Teachers at Higher Education Level. Bulletin of Education and Research, 41(1), 57-66.

Robles, A. (2019) Development and Validation of Educational Video Tutorials for 21st Century Secondary Learners. https://asianjournal. org/online/index. php/ajms/article/view/186

Seifeddine, F. (2014). Predictors of student motivation to succeed in first-year college mathematics: A quantitative analysis. Journal of Educational Thought/Revue de la Pensée Educative, 47(3), 204-235.

Siaw, E. S., Shim, G. T. G., Azizan, F. L., & Shaipullah, N. M. (2021). Understanding the Relationship between Students' Mathematics Anxiety Levels and Mathematics Performances at the Foundation Level. Journal of Education and Learning, 10(1), 47- 54.

Tella, A. (2017). The impact of motivation on student's academic achievement and learning outcomes in mathematics among secondary school students in Nigeria. Eurasia Journal of Mathematics, Science & Technology Education, 3(2), 149-156. ISSN: 1305- 822.

Varaidzai Makondo, P., & Makondo, D. (2020). Causes of poor academic performance in mathematics at Ordinary Level: A Case of Mavuzani High School, Zimbabwe. International Journal of Humanities and Social Science Invention (IJHSSI), 9(1), 10-18.

Yunos, N. M., Thangal, T. B. T., Sharif, N. F. M., Rashid, N. R. A., & Rahmat, N. H. (2021). Exploring motivation to learn mathematics through vroom's theory. European Journal of Education Studies, 8(11). http://dx.doi.org/10.46827/ejes.v8i11.3976