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## RELATIONSHIP BETWEEN LEARNERS' MATHEMATICS SELF-EFFICACY AND ANXIETY

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### ABSTRACT

The quantitative study aimed to determine the relationship between Mathematics self-efficacy and anxiety of Grade 11 learners of Mandurriao National High School, District V-A, Mandurriao, Iloilo City during the school year 2023-2024. The descriptive method and descriptive-correlational research design were used in the study. Respondents of the study were the 232 Grade 11 learners who were taken randomly from the total population of 551 learners. All of the Grade 11 learners, regardless of sex or strand, had a high level of self-efficacy. The overall amount of anxiety that Grade 11 learners displayed in relation to Mathematics was high. When the learners were sorted by sex, the male learners showed a high level of Mathematics anxiety, while the female learners showed a moderate level. Results showed that the relationship between the level of learners' self-efficacy and their level of anxiety in Mathematics subject were significant when classified according to sex and strands.

**Keywords:** *Relationship, Mathematics, Learners' Mathematics Self-Efficacy, Learners' Anxiety*

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## INTRODUCTION

It has been said that Mathematics is a fundamental subject. The first stage in the professionalization of Mathematics instructors is achieving excellence in teaching. With this, Mathematics teachers should strive to obtain a top-notch education to accomplish this. Indeed, education authorities should emphasize the importance of learners' problem-solving and computation skills.

Teacher Education institutions (TEIs) aims to provide prospective Math teachers with the best possible education through course options internship or field experience, and support systems.

Teaching Mathematics is particularly challenging because of the issues that educators especially Math teachers confront nowadays. The most important difficulty is the breadth and depth of Mathematics curriculum that educators should be proficient in.

For instance, the conviction held by an elementary school Math teacher that any integer splits by zero is also zero, thus, demonstrates how severely our Math teachers lack thorough comprehension of the subject matter. This has a lot to do with how unprepared our Math teachers are in selecting effective teaching methods for delivering certain subject matter to groups of learners. Poorly qualified Math teachers frequently exhibit two similar behaviors. They either teach advanced skills to learners who lack the necessary background knowledge or abilities, or they

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teach deficient levels of skills to able learners. Teachers of Mathematics also find difficulty in the implementation process.

The Mathematics taught in schools today is the result of centuries worth of research, experimentation, and discoveries made by Mathematicians over many years of arduous work, both individually and together. Learning Mathematics is a difficult and takes time. The time, energy, and resources that our forebears have dedicated to learning and comprehending Mathematics are things that today's Math learners must likewise devote.

Further, teachers need to understand how curriculum, instruction, and assessment are all aligned, and that learners need to have the appropriate attitudes. It can be possible if educators continually evaluate their instruction, that is, consider whether the learners have learned and retained the material that is supposed to be taught. Instruction can also serve as a diagnostic tool that can assist in spotting misconceptions. It can offer educational opportunities for the learners to achieve conceptual shifts and get the most out of their education.

However, it's not necessary for the applicability of Mathematics being taught to be instantly apparent. Even though it doesn't seem to apply to everyday life, some fundamental mathematical concepts are nonetheless important to teach. To keep Mathematics understandable for the learners and prevent anxiety in them, Math teachers in these situations need to be able to, at the very least, speak the language of the learners. This means being aware of the language

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that the learners speak, any jargon they may use, and all accompanying nuances of their language.

Taking into consideration all of the previously mentioned factors, the goal of this study is to ascertain the level of self-efficacy and anxiety of learners when learning Mathematics and whether or not these are connected to their success in learning Mathematics subject.

## MATERIALS AND METHODS

### Research Methodology

The chapter presents the research method, research design, respondents of the study, sampling design, data gathering procedure, research instrument, data analysis, and statistical tools that were used in analyzing and interpreting data in the study.

### Research Method

The study employed the descriptive method. Fraenkel and Wallen (2007) state that the descriptive method is employed to provide as thorough and detailed a description of a particular scenario as feasible.

Based on the data collected, it may be possible to assess the benefits and drawbacks of current technology for the Mathematics teachers in the new normal.

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## Research Design

The research design for the study was descriptive-correlational. A research approach of this type is to describe or document the characteristics, behaviors, opinions, attitudes, and views of the population or group being studied. Moreover, neither future findings nor causal relationships between variables are attempted to be predicted. Instead, it focuses on providing a complete and detailed representation of the data collected, which can aid in the formulation of hypotheses, the examination of trends, and the identification of patterns in the data (Hassan, 2023).

## Participants of the Study

The respondents of the study were the 232 Grade 11 learners who were taken randomly from 551 total population of Grade 11 learners who were enrolled at Mandurriao National High School during the school year 2023-2024.

In Accountancy, Business and Management (ABM) strand, section Kepler, 16 learners (6%) were taken randomly from a total of 37.

In Accountancy, Business and Management (ABM) strand, section Newton, 15 learners (5%) were taken randomly from a total of 35.

In General Academic Strand (GAS)strand, section Lovelace, 21 learners (9%) were taken randomly from the total of 49.

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In Humanities and Social Sciences (HUMSS) strand, section Archimedes, 23 learners (10%) were taken randomly from a total of 55.

In Humanities and Social Sciences (HUMSS) strand, section Babbage, 23 learners (10%) were taken randomly from a total of 55.

In Humanities and Social Sciences (HUMSS) strand, section Copernicus, 23 learners (10%) were taken randomly from the total of 55.

In Humanities and Social Sciences (HUMSS) strand, section Edison, 24 learners (10%) were taken randomly from a total of 56.

In Humanities and Social Sciences (HUMSS) strand, section Mendel, 23 learners (10%) were taken randomly from a total of 55.

In Home Economics strand, section Curie, 16 learners (7%) were taken randomly from a total of 39.

In Home Economics strand, section Einstein, 16 learners (7%) were taken randomly from a total of 38.

In Home Economics strand, section Fleming, 16 learners (7%) were taken randomly from a total of 39.

In Home Economics strand, section Tesla, 16 learners (7%) were taken randomly from the total of 38.

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## Sampling Design

To extract the required number of respondents from the entire population, two stage-random sampling designs were applied. Simple random sampling was utilized following the application of Slovin's technique to determine the sample size.

According to David (2005), simple random sampling is the process of choosing sample cases from a subset of sample cases in a population, ensuring that each sampling unit has an equal chance of being included in the sample.

Stratified sampling was also used to obtain the representative of the school. It was used as the second stage in the sampling design.

## Research Instrument

Mathematics Self-Efficacy and Anxiety Questionnaire (MSEAQ), which was taken from the study of May (2006), was the instrument used in the study.

The survey consisted of two sections. Part one (1) contained respondents' information, and Part two (2) was the questionnaire regarding the mathematical self-efficacy and anxiety of the learners.

Part one (1) included respondents' sex and strands in the senior high school in which they were currently enrolled.

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Part two (2) were composed of 30 items of which 20 items contained questions for Mathematics self-efficacy and 10 items for Mathematics anxiety.

The respondents were asked to rate every item based on the rating scale below:

- |   |   |                     |
|---|---|---------------------|
| 5 | - | Usually             |
| 4 | - | Sometimes           |
| 3 | - | About Half the Time |
| 2 | - | Seldom              |
| 1 | - | Never               |

### Validity of the Research Instrument

Prior to the determination of the validity of the interview schedule made by the researcher, the adviser, the Dean of the Graduate School then a panel of jurors who are considered for their expertise in the field of research, testing, and assessment, and English, was requested to validate each question for review and modification.

Validity refers to the appropriateness, meaningfulness, correctness, and usefulness of inferences that a researcher makes. In content-related evidence of validity, the content and format must be consistent with the definition of variables and sample of the subject to be measured and is also helpful in validating the items in the questionnaire (Fraenkel & Wallen, 2017).

Comments, corrections, and suggestions of the panel of validators regarding the interview schedule were considered using the appropriate form of Good and Scates (Appendix A).

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## Data Gathering Procedures

The researcher formulated letter requests and sent them to the principals of the target schools to conduct the study to the respondents. When permission was granted, the researcher personally conducted and started distribution and administration of the questionnaires to the Grade 11 respondents. The researcher solicited the cooperation and understanding of the school heads and respondents to ensure easy retrieval and gathering of the questionnaires. Compliance with research ethics protocol was also done through the signed informed consent to ensure the dignity of the respondents.

## Data Analyses

The total amount of participants in the study determined the replication of the research instrument. Following the completion of the questionnaire, the information was sorted, calculated, and totaled.

Computer programs such as the Statistical Package for Social Sciences (SPSS) were utilized for calculations, analyses, and interpretations.

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## RESULTS AND DISCUSSIONS

The study aimed to determine the relationship between Mathematics self-efficacy and anxiety of Grade 11 learners of Mandurriao National High School, District V–A, Mandurriao, Iloilo City during the school year 2023–2024.

A descriptive-correlational research design was employed in the study.

The 232 Grade 11 learners who were selected at random from a total population of 551, served as the respondents of the study.

Mathematics Self-Efficacy and Anxiety Questionnaires were used to gather data. It was adopted from questionnaire used in the study of May (2006). The questionnaire had 30 items of which 20 items were for self-efficacy in Mathematics combined with the ten anxiety-related items.

Both the descriptive and inferential statistics will be used in the study. For descriptive statistics, the mean, percentage, and frequency count were used. The t-test, ANOVA, and Pearson r will be employed for inferential statistics, with a significance level of .05.

All of the Grade 11 learners, regardless of sex or strand, had a high level of self-efficacy. When grouped based on sex, both male and female learners exhibited high levels of self-efficacy in Mathematics. Although the mean scores varied slightly, the overall findings affirmed a positive self-perception of capabilities among learners of both sexes.

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In terms of academic strands, learners in the Accountancy, Business, and Management (ABM) category demonstrated a high level of self-efficacy, while Humanities and Social Sciences (HUMSS) learners reported an even greater level.

Similarly, General Academic Strand(GAS) and Home Economics (HE) learners both indicated elevated levels of self-efficacy.

These observations suggest that learners across various academic strands generally hold a positive perception of their capabilities in Mathematics.

After being divided into groups according on strand and sex, Grade 11 learners' level of Mathematics self-efficacy did not differ significantly.

When the p-value for these two variables was higher than the.05 alpha, it suggested that the results were not significant.

The overall amount of anxiety that Grade 11 learners displayed in relation to Mathematics was 'high'. When the learners were sorted by sex, the male learners showed a 'high' level of Mathematics anxiety, while the female learners showed a 'moderate' level, suggesting that the male learners may have slightly higher worry. Learners in ABM, HUMSS, and GAS demonstrated a "high" level of Mathematics anxiety, according to an analysis of the data based on academic strands.

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On the other hand, 'moderate' levels of Mathematics anxiety were indicated by learners in the HE strand. Ultimately, a strong correlation was observed between the level of learners' self-efficacy in Mathematics and their level of Mathematics anxiety.

## CONCLUSION

Learners nowadays are motivated to learn if properly given proper attention and direction which leads to a high level of self-efficacy. Other factors or variables could not directly affect their performance due to their dedication to learning Mathematics in the classroom.

Female learners perform significantly better than males, but both perform better in other aspects and areas of Mathematics.

Much of the desire of the learners to learn more and better in Mathematics, there are still some who cannot manage well and have a negative outlook on Mathematics as a learning area.

Regardless of learners' variables and other factors, they still have the same way of embracing Mathematics and their perception sometimes after their performance.

The more the learners perform better in Mathematics, the more they have negative feelings about the subject. Their negative outlook on the subject serves as their motivation to do more to improve their academic performance.

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## RECOMMENDATIONS

The high level of mathematical self-efficacy among learners suggests that they have a strong motivation to understand the subject. This should be reinforced by Mathematics, which should always inspire and motivate learners to learn and succeed in the subject.

Male learners demonstrated slightly higher levels of anxiety in their Mathematics subject as compared to their female counterparts. Mathematics teachers may design activities targeting the difficulties encountered by Grade 11 learners, especially males. Providing them with the support they need will boost their self-confidence. Consequently, it will also increase their level of self-efficacy in performing tasks in Mathematics.

School administrators may come up with programs aimed at lowering the Mathematics anxiety of Grade 11 learners.

Future researchers may conduct further research study exploring other variables that affects the level of Mathematics self-efficacy and anxiety of Grade 11 learners.

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