Mathematical Comprehension, Contextualized Learning and Academic Achievement of Students

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DOI: https://doi.org/10.47772/IJRISS.2026.100701006

Received: 05 August 2026; Accepted: 10 August 2026; Published: 19 August 2026

INTRODUCTION

This chapter presents the background of the study, theoretical framework, conceptual framework, statement of the problem, hypotheses of the study, significance of the study, scope and limitations of the study, and definition of terms.

Background of the Study

Mathematics is a foundational pillar of basic education that develops higher-order thinking, analytical reasoning, and problem-solving skills essential for academic success and lifelong learning. However, many students still experience difficulties in mathematics due to its abstract nature and limited connection to real-life situations.

International assessments such as the Programme for International Student Assessment (PISA) show that many learners perform below minimum proficiency levels in mathematics, particularly in applying mathematical concepts to real-world contexts (OECD, 2023). This highlights the need for instructional approaches that go beyond memorization and promote deeper conceptual understanding and meaningful learning.

While international assessments like PISA highlight a global struggle in applying mathematical concepts to real-world scenarios, this challenge is equally felt in the Philippine context. Students in technical-vocational programs, such as the Strengthened Technical-Vocational Education Program (STVEP), are expected to apply mathematical concepts in practical and skills-based tasks. For these learners, mathematics should not remain purely abstract; instead, it must bridge the gap between classroom theories and vocational skills. Thus, developing mathematical comprehension through real-life learning experiences is essential in strengthening both their academic and vocational competencies.

Mathematical comprehension refers to the ability of learners to understand mathematical concepts, interpret mathematical problems, and apply appropriate solution strategies in solving mathematical tasks rather than merely relying on memorized procedures (Arianti, 2024). Students with stronger conceptual understanding are generally more successful in solving complex problems and performing higher-order tasks.

Similarly, contextualized learning, which involves teaching concepts through meaningful real-life situations, has been shown to enhance understanding, engagement, and application of knowledge (Solis & Pasia, 2024). For Grade 8 STVEP students, connecting mathematics instruction to vocational and everyday contexts fosters meaningful learning and improved achievement.

Although contextualized instruction and mathematical comprehension have been examined in mathematics education, evidence remains context-dependent, particularly for Grade 8 STVEP learners. The present study therefore contributes school-level evidence on how students' mathematical comprehension and perceptions of contextualized instruction are associated with their Mathematics grades.

Given these gaps in literature, the present study investigated the relationship between mathematical comprehension, contextualized learning, and academic achievement of Grade 8 STVEP students. The findings are expected to provide valuable insights for teachers, curriculum developers, and school administrators in

enhancing instructional strategies that promote comprehension, engagement, and academic performance under the Revised K to 12 Basic Education Curriculum.

THEORETICAL FRAMEWORK

This study was grounded in theories that explain how students acquire mathematical understanding and how instructional strategies relate to academic achievement.

This study was anchored on the Constructivist Theory, which explains that learners actively construct knowledge through meaningful experiences rather than passively receiving information. The theory integrates the perspectives of Jean Piaget and Lev Vygotsky, both of whom emphasized the active role of learners in the learning process.

Piaget's Cognitive Constructivist Theory explains that learners develop understanding by building new knowledge upon their prior experiences through exploration, reflection, and problem-solving. As Grade 8 students continue to develop higher-order thinking skills, they become more capable of understanding mathematical concepts when these are presented through meaningful and concrete learning experiences.

Vygotsky's Social Constructivist Theory complements this perspective by emphasizing that learning occurs through social interaction and guidance from more knowledgeable individuals. Through teacher support, collaboration with peers, and appropriate instructional strategies, students are able to develop a deeper understanding of mathematical concepts.

The Constructivist Theory provided the foundation for this study because contextualized learning allows students to connect mathematical concepts with real-life situations and their technical-vocational experiences. By relating classroom lessons to meaningful and familiar contexts, students are expected to develop better mathematical comprehension, resulting in improved academic achievement in Mathematics. Thus, the theory supports the assumption that meaningful and contextualized learning experiences promote deeper understanding and enhance students' learning outcomes.

Conceptual Framework

This study examined the relationships among students' mathematical comprehension, students' perceptions of contextualized instructional practices, and academic achievement in Mathematics among Grade 8 STVEP students. The conceptual model distinguishes contextualized instruction as an instructional condition, student engagement as a learner response, mathematical comprehension as a cognitive outcome, and academic achievement as a broader academic outcome. The model is theoretically informed by the possibility that contextualized instruction may support engagement and comprehension, which may in turn be associated with academic achievement; however, these pathways were not tested causally in the present cross-sectional correlational design.

Mathematical comprehension is treated in this study as a cognitive outcome reflecting students' ability to understand mathematical concepts, interpret mathematical problems, and apply mathematical knowledge in solving Mathematics tasks. Importantly, this construct is measured by a researcher-made Mathematics test, while academic achievement is measured by final Mathematics grades. Both therefore represent Mathematics achievement-related outcomes and may share substantial content.

Contextualized instructional practices are treated as an instructional condition perceived by students. The questionnaire covers the use of real-life examples, relevance of lessons to daily activities, and teacher use of contextualized teaching strategies. Student engagement is conceptually treated as a distinct learner response rather than as an instructional practice. Because the original instrument combined these four dimensions into a single composite score, the present analysis retains the composite for consistency with the original study but interprets it cautiously and recognizes that the four dimensions may not represent a single homogeneous construct.

The dependent variable, academic achievement in mathematics, is defined operationally as students' performance as reflected in their official Mathematics grades

In addition, demographic variables such as sex, STVEP track, parents' educational attainment, and average family monthly income were considered as descriptive variables. These characteristics provided important contextual information about the respondents and offered insights into the interpretation of the study findings. While the demographic variables provided important descriptive context regarding the Grade 8 STVEP students, these variables were not examined in association with academic achievement in this correlational study.

The study therefore examined associations among these measures while avoiding causal interpretations. In particular, the strong association between mathematical comprehension and final Mathematics grades must be interpreted in light of possible measurement overlap because both measures assess Mathematics-related performance.

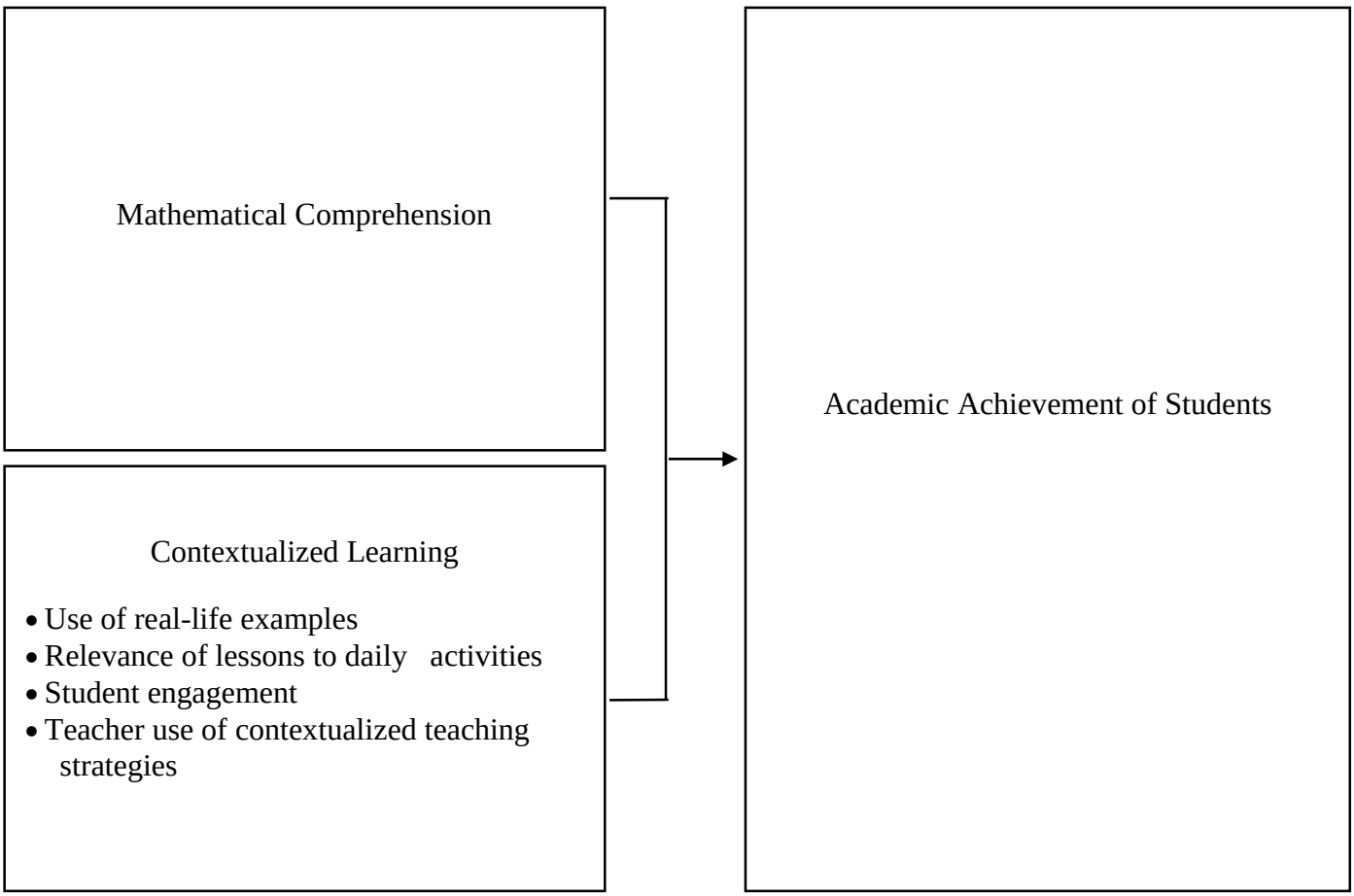

Figure 1. Schematic Diagram of the Study.

Statement of the Problem

This study determined the relationship between mathematical comprehension and contextualized learning in relation to the academic achievement of Grade 8 STVEP students at one of the public Junior High Schools in Negros Occidental.

Specifically, it sought to answer the following questions:

1. What is the level of mathematical comprehension of Grade 8 STVEP students?
2. What is the level of contextualized learning in mathematics as perceived by the students in terms of:

a. use of real-life examples;
b. relevance of lessons to daily activities;

c. student engagement; and
d. teacher use of contextualized teaching strategies?

3. What is the level of academic achievement of Grade 8 STVEP students based on their final Mathematics grades?

4. Is there a significant relationship between mathematical comprehension and academic achievement in mathematics?

5. Is there a significant relationship between contextualized learning and academic achievement in mathematics?

Hypotheses of the Study

Based on the statement of the problem, the following hypotheses were formulated:

1. There is no significant relationship between mathematical comprehension and academic achievement of Grade 8 STVEP students.
2. There is no significant relationship between contextualized learning and academic achievement of Grade 8 STVEP students.

Significance of the Study

This study is significant to the following individuals and institutions as it seeks to determine how mathematical comprehension and contextualized learning relate to the academic achievement of Grade 8 STVEP students:

Department of Education (DepEd). This study may provide DepEd with relevant empirical evidence on how mathematical comprehension and contextualized learning relate to academic achievement of Grade 8 STVEP students. The findings may serve as a useful input in strengthening the curriculum, particularly in enhancing mathematics instruction that is more responsive, practical, and aligned with real-life applications. It may also support policy refinement on teacher training, curriculum development, and learning delivery strategies aimed at improving learner outcomes in technical-vocational education.

Schools Division Superintendent. The results of this study may assist the Schools Division Superintendent in developing more targeted and data-driven interventions to improve students' academic performance in mathematics. By understanding the role of comprehension and contextualized learning, appropriate programs, monitoring systems, and instructional support mechanisms may be designed to address learning gaps among Grade 8 STVEP learners across schools.

Curriculum Implementation Division (CID) Chief. The findings may serve as base for reviewing and enhancing the implementation of mathematics curricula. The study may provide insights into how contextualized learning approaches can be integrated more effectively into classroom instruction to strengthen students' mathematical comprehension and ultimately improve their academic achievement.

Education Program Supervisor in Mathematics. The results of this study may guide Mathematics Education Program Supervisors in assessing the effectiveness of current instructional strategies used in schools. It may also help them design more focused teacher training programs and classroom interventions that emphasize improving students' mathematical comprehension through contextualized and authentic learning experiences.

School Administrators/Principal. The study may use the findings as a basis for planning instructional improvement programs, monitoring mathematics performance, and supporting professional development activities that strengthen effective teaching practices.

Mathematics Department Head. Department heads may utilize the findings to evaluate and improve instructional practices within the mathematics department. The study may help them identify gaps in students' mathematical comprehension and encourage the use of contextualized learning strategies that make lessons more meaningful

and easier to understand. In doing so, they may help ensure alignment between classroom instruction and DepEd learning standards while improving student achievement.

Teachers. Mathematics teachers may directly benefit from this study as it provides insights into how students' comprehension and contextualized learning experiences affect their academic performance. The findings may guide them in designing more effective lesson plans, integrating real-life applications, and using instructional strategies that enhance understanding, engagement, and problem-solving skills among Grade 8 STVEP students.

Students. The students may benefit from this study through improved learning experiences in mathematics. By identifying the importance of comprehension and contextualized learning, students may develop better understanding of mathematical concepts and improve their academic achievement. The study may also encourage them to relate mathematics to real-life situations, making learning more meaningful and less abstract.

Parents. Parents may gain a clearer understanding of how mathematical comprehension and contextualized learning relate to their children's academic performance. This awareness may help them provide more meaningful support at home, such as encouraging practical applications of mathematics in daily life and fostering a positive attitude toward learning mathematics.

Present Researchers. This study will provide the researchers with deeper understanding of the factors associated with mathematics achievement among Grade 8 STVEP students. Through the conduct of this research, the researchers will enhance their skills in educational research, data analysis, and evidence-based instructional evaluation. The study will also contribute to their professional growth as future educators and advocates of meaningful mathematics instruction.

Future Researchers. The findings of this study may serve as a valuable reference for future researchers investigating similar variables such as mathematical comprehension, contextualized learning, and academic achievement. It may also provide a foundation for comparative or expanded studies across different grade levels, subject areas, or educational settings to further validate or extend the results of this research.

Scope and Limitations of the Study

This study focused on the mathematical comprehension and contextualized learning of Grade 8 Strengthened Technical-Vocational Education Program (STVEP) students at a selected public junior high school in Negros Occidental during the school year 2025–2026. Specifically, it examines the relationship between academic achievement in mathematics and two key variables: mathematical comprehension and contextualized learning.

Consequently, the findings of this study are delimited to a specific cohort of students and may not be generalized to STVEP students in other schools or educational settings because the study utilized a researcher-made test and questionnaire, the results are subject to potential measurement limitations.

All information gathered in this study were kept strictly confidential to protect the privacy of the respondents. Their names and personal details were omitted from all parts of the research manuscript, and the data collected were utilized solely for academic purposes. The researcher ensured that the rights and welfare of the respondents were respected at all times. Furthermore, data collection was scheduled during the students' regular mathematics time, in proper coordination from school authorities. The sessions were meticulously arranged to ensure no disruption of classes or regular academic activities.

Despite these limitations, the study provides valuable insights into the relationship among mathematical comprehension, contextualized learning, and academic achievement.

Definition of Terms

This section provides the conceptual and operational definitions of the key variables used in the study to ensure clarity and a common understanding for the readers.

Academic Achievement. It refers to the extent to which learners demonstrate mastery of mathematical knowledge, skills, and competencies, as reflected in their performance in classroom assessments such as quizzes, examinations, projects, and other performance tasks (Woolfolk, 2022).

Operationally, this variable is represented by the students' final Mathematics grades as recorded in official school documents.

Contextualized Learning. It refers to an instructional approach that connects academic concepts to real-life situations, enabling learners to construct meaningful understanding based on their everyday experiences (Tañola & Lomibao, 2024).

In this study, students' perceptions of contextualized learning are determined using a researcher-made Likert-scale questionnaire that measures the extent to which mathematics lessons are connected to real-life contexts.

Mathematical Comprehension. It refers to learners' understanding of mathematical concepts and relationships that enables them to interpret problems and apply mathematical knowledge effectively in solving tasks and real-world situations (Jonsson et al., 2020).

As used in this study, this variable is assessed using a researcher-made 30-item multiple-choice Mathematics Comprehension Test based on the Grade 8 MATATAG Curriculum competencies. Each correct response earns one point, and the total score indicates the respondent's level of mathematical comprehension.

Relevance of Lessons to Daily Activities. It refers to the extent to which students perceive that mathematics lessons are applicable and useful to their daily life experiences and real-world situations (Solis & Pasia, 2024).

Operationally, students' perceptions are obtained from their responses to the relevant Likert-scale items included in the contextualized learning questionnaire.

Student Engagement. Student engagement is a multidimensional construct that refers to students' behavioral participation, emotional involvement, and cognitive investment in learning activities and school contexts, which collectively influence academic outcomes (Reschly & Christenson, 2022; Wong & Liem, 2022).

In this study, the level of student engagement is derived from students' ratings on selected Likert-scale items that assess their participation and involvement during mathematics lessons.

Teacher Use of Contextualized Teaching Strategies. It refers to instructional practices where teachers integrate real-life situations and learners' experiences into lesson delivery to make learning more meaningful and understandable (Boaler, 2022).

As used in this study, this variable is evaluated based on students' responses to Likert-scale items that determine how frequently teachers integrate real-life applications into mathematics instruction.

Use of Real-Life Examples. It refers to the instructional strategy where teachers present mathematical concepts using real-world situations to enhance understanding and relevance of lessons (Cambaya & Tan, 2022).

Operationally, students' responses to the relevant Likert-scale items indicate the extent to which teachers incorporate real-life examples during mathematics instruction.

These definitions are cross-referenced in Chapter 2 and Chapter 3 for operational use.

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents related literature and studies that provide a strong foundation for the present research on mathematical comprehension, contextualized learning, and academic achievement of Grade 8 STVEP students.

Mathematical Comprehension

Mathematical comprehension refers to the learner's ability to understand mathematical concepts deeply, interpret representations, explain reasoning, and apply knowledge to unfamiliar situations. It goes beyond memorization and focuses on meaningful understanding of mathematical relationships.

Several studies conducted in the Philippines indicate that reading comprehension is strongly associated with mathematical performance. Luna et al. (2024) found that students with higher reading comprehension were significantly better at solving mathematical word problems, and similar findings have been highlighted in broader analyses of Philippine education, where low performance in international and national assessments underscores the role of comprehension in mathematics achievement (Ignacio et al., 2022).

From the perspective of classroom instruction, Boaler (2022) highlighted that students develop stronger mathematical understanding when they engage in reasoning, discussion, and problem-solving rather than rote memorization. She explained that conceptual learning allows students to transfer knowledge to unfamiliar situations, which is essential in mathematics achievement.

Building on this idea, Ho (2020) emphasized that mathematical understanding encompasses conceptual knowledge, procedural fluency, and the ability to integrate these competencies in solving mathematical problems. The study revealed that learners who possess a deeper understanding of mathematical concepts are more capable of applying appropriate strategies and demonstrating higher levels of mathematical performance. This suggests that mathematical comprehension is significantly associated with students' academic achievement in mathematics.

In a Philippine-based study, findings revealed that poor comprehension is a major barrier in mathematics learning. Students struggle with interpreting word problems and connecting mathematical ideas, which affects overall performance (Recanil & Quirante, 2025).

In addition, mathematical comprehension is essential in developing mathematical literacy, which involves interpreting and applying mathematics in real-life situations. The OECD (2023) stressed that mathematical literacy is crucial for preparing learners to function effectively in modern society, particularly in problem-solving and decision-making.

Contextualized Learning

Contextualized learning is an instructional approach that connects academic concepts to real-life situations, making learning more meaningful and relevant to students' experiences. It enables learners to construct understanding by linking new knowledge with familiar situations, thereby promoting deeper comprehension and meaningful learning. In Mathematics, contextualized learning is particularly significant because it helps students understand abstract concepts by relating them to practical applications that they encounter in their daily lives and technical-vocational specializations. By making mathematical ideas relevant and applicable, contextualized learning enhances students' interest, motivation, engagement, and confidence in learning Mathematics.

Alipour et al. (2023) explained that presenting mathematical content in real-life or meaningful contexts improves students' learning motivation and cognitive engagement. Their study found that learners are more likely to understand and retain mathematical concepts when instruction is framed in situations that are familiar and relevant to their daily experiences. These findings highlight the significance of contextualized learning in facilitating students' understanding of abstract mathematical concepts while improving their academic performance.

Similarly, Chabeli et al. (2021) emphasized that learning becomes more effective when students engage in authentic tasks and solve problems that mirror real-life situations. According to the authors, authentic learning experiences promote deeper cognitive processing and enable learners to construct meaningful understanding by

applying mathematical knowledge in relevant contexts. This suggests that exposing students to practical applications of Mathematics helps bridge the gap between abstract concepts and real-world experiences.

Several studies have also identified instructional strategies that effectively support contextualized learning in Mathematics. Solis and Pasia (2024) demonstrated that the use of Contextualized Instructional Sheets (CIS) significantly improved the mathematics performance of Grade 8 students by presenting lessons through familiar and meaningful situations. Likewise, Madrazo and Dio (2020) found that integrating real-life examples with STEM-related Mathematics activities increased students' engagement and academic achievement by enabling them to apply mathematical concepts to authentic problems. Similarly, Cambaya and Tan (2022) reported that contextualized instructional strategies, such as problem-solving activities based on real-life situations and practical applications, significantly enhanced students' mathematical performance and problem-solving skills compared with traditional teaching approaches. These studies suggest that instructional strategies anchored in real-life experiences make abstract mathematical concepts easier for students to understand and apply.

In establishing the indicators of contextualized learning used in this study, Lago and Ortega-Dela Cruz (2021) emphasized that effective contextualized instruction is achieved by integrating real-life examples, authentic materials, hands-on activities, collaborative learning, and situations that are directly related to the students' immediate environment. Their study showed that these teaching strategies increase student engagement, improve attitudes toward Mathematics, reduce mathematics anxiety, and enhance academic achievement. Consequently, the indicators adopted in the present study namely, the use of real-life examples, relevance of lessons to daily activities, student engagement, and teacher use of contextualized teaching strategies reflect instructional practices that help students understand abstract mathematical concepts by connecting them with meaningful and practical experiences.

Use of Real-Life Examples

The use of real-life examples is an important component of contextualized learning. It helps bridge the gap between abstract mathematical concepts and practical applications.

Contextualized instruction that utilizes real-life situations has been shown to improve both engagement and problem-solving skills among learners (Cambaya & Tan, 2022). Similarly, Solis and Pasia (2024) found that contextualized instructional sheets (CIS) linking mathematics to everyday or vocational scenarios foster deeper understanding. For STVEP learners, integrating mathematics lessons with practical tasks (e.g., calculating materials for garments or food ingredients) strengthens comprehension and relevance.

Boaler (2022) emphasized that mathematics becomes more meaningful when taught through real-world problems. Students understand better when they see how mathematical concepts apply to everyday life.

Real-life examples such as shopping discounts, travel time, sports statistics, and household budgeting make mathematics more relatable and engaging. These examples also improve students’ problem-solving skills and retention of knowledge.

Relevance of Lessons to Daily Activities

Making lessons relevant to daily life is a key principle of contextualized learning. Solis and Pasia (2024) highlighted that aligning mathematical lessons with learners’ daily experiences enhances motivation and retention. For STVEP students, when mathematical problems reflect the practical realities of their vocational tracks, learners perceive the content as meaningful, which increases engagement and academic performance.

Studies and international education frameworks suggest that learning becomes more effective when students relate academic content to real-life situations, improving both engagement and achievement.

In mathematics, real-life applications such as budgeting, measuring ingredients, computing time, and analyzing discounts help students appreciate the usefulness of mathematical concepts in everyday decision-making.

Student Engagement

Student engagement refers to the level of attention, participation, and emotional and cognitive involvement that students show in the learning process.

Hattie (2023) emphasized that student engagement is a major predictor of academic success. Students who are actively engaged are more likely to persist in solving difficult problems and achieve higher academic performance.

Boaler (2022) also noted that engagement in mathematics increases when students are given opportunities to explore ideas, collaborate, and solve meaningful problems rather than simply memorize procedures.

A study conducted in the Philippines revealed that higher levels of behavioral, emotional, and cognitive engagement were associated with better mathematics performance among secondary students (Flores, 2024). Contextualized learning strategies that include interactive and hands-on activities stimulate engagement, making abstract concepts accessible. In STVEP settings, engagement improves when students see the connection between mathematics lessons and their future technical-vocational work.

When students are engaged, they become more confident, motivated, and willing to participate in classroom activities, leading to improved learning outcomes.

Teacher Use of Contextualized

Teaching Strategies

Teacher use of contextualized teaching strategies refers to instructional methods that connect lessons to real-life situations, learners' experiences, and community contexts.

Chabeli et al. (2021) further explained that meaningful learning occurs when students engage in authentic tasks and problem-solving activities that reflect real-world situations. In mathematics, this may include practical applications such as budgeting, measuring, and analyzing everyday situations, which help learners connect abstract concepts to meaningful experiences and deepen their understanding.

Teachers play a critical role in implementing contextualized strategies by designing lessons that reflect students' environment and experiences. These strategies may include group activities, problem-based learning, and the use of real-life scenarios.

Solis and Pasia (2024) emphasized that teacher strategies are crucial in implementing contextualized learning. Teachers who integrate vocational scenarios, practical examples, and problem-based tasks enhance student comprehension and academic performance. For STVEP students, instructors' ability to contextualize mathematics reinforces both conceptual understanding and procedural application, bridging classroom theory and practical experience.

Academic Achievement

Academic achievement refers to the measurable performance of students in academic tasks, commonly reflected in grades, test scores, and competency assessments. It reflects mastery of mathematical competencies as defined by the curriculum. According to DepEd (2023), student performance is associated with comprehension, instructional strategies, and engagement. Empirical studies support this, Luna et al. (2024) reported that students exposed to contextualized learning and with higher mathematical comprehension achieve significantly better outcomes. For Grade 8 STVEP learners, the combination of comprehension skills and contextualized teaching is particularly effective in raising academic performance in mathematics.

According to Anita Woolfolk (2022), academic achievement is influenced by cognitive ability, motivation, instructional quality, and the learning environment. Students perform better when instruction is clear, meaningful, and well-structured.

John Hattie (2023) identified teacher clarity, feedback, and engagement as among the strongest influences on student achievement. He emphasized that effective teaching strategies significantly improve learning outcomes across subjects, including mathematics.

International assessments such as the Programme for International Student Assessment (PISA) conducted by the OECD (2023) continue to show that many students struggle in mathematics, particularly in applying concepts to real-life situations. This highlights the need for improved instructional approaches that promote deeper understanding.

In the Philippines, mathematics achievement remains a concern, as reflected in national and international assessments, highlighting the need for improved instructional strategies (OECD, 2023).

Mathematical Comprehension and Academic Achievement

Research consistently shows a strong relationship between mathematical comprehension and academic achievement.

Zhu and Wu (2023) examined how mathematics reading ability, a key skill in understanding mathematical language and concepts, is closely associated with students' mathematics achievement. Their findings show that stronger mathematics reading skills are correlated with higher value-added performance in mathematics learning, suggesting that comprehension abilities facilitate deeper mathematical understanding and achievement.

Ho (2020) examined the role of conceptual understanding, procedural fluency, and the integration of conceptual and procedural knowledge in mathematical problem solving. The study revealed that students who demonstrated a higher level of conceptual understanding performed better in solving mathematical problems, indicating that mathematical comprehension is closely associated with academic performance in mathematics. The findings suggest that learners who understand mathematical concepts and relationships are more likely to achieve higher levels of academic achievement than those who rely primarily on memorized procedures.

Jonsson et al. (2020) found that students who engaged in creative mathematical reasoning developed deeper mathematical understanding and demonstrated better performance in solving mathematical tasks. Their findings emphasized that comprehension of mathematical concepts and relationships contributes significantly to students' success in mathematics and promotes real-life learning.

Furthermore, Luna et al. (2024) found that reading comprehension significantly predicts students' performance on mathematical word problems among Filipino secondary pupils, illustrating how language comprehension supports mathematical reasoning and performance, key components of mathematical comprehension linked to academic achievement.

In a Philippine-based study, comprehension skills were found to be significant predictors of mathematics performance among Grade 7 learners (Recanil & Quirante, 2025). These findings suggest that higher levels of mathematical comprehension are associated with higher levels of academic achievement, especially in problem-solving and higher-order thinking tasks.

Contextualized Learning and Academic Achievement

Contextualized learning has been widely recognized as an effective approach in improving academic achievement. By connecting lessons to real-life situations, students develop better understanding and retention of concepts.

Zhu and Wu (2023) investigated the impact of contextualized teaching and learning (CTL) on student achievement in mathematics within a vocational school setting. Their quasi-experimental study showed that contextualized instruction significantly improved students' mathematics achievement, especially in contextualized problem-solving by linking academic content to real-life contexts.

Eccles and Wigfield (2020) explained that when learners perceive learning tasks as relevant to their lives, they tend to exhibit higher motivation and engagement, which positively influences their academic performance. Chabeli et al. (2021) also supported this view by explaining that authentic learning experiences enhance students' cognitive engagement by requiring them to analyze, interpret, and apply knowledge to real-world situations. The authors further noted that learning becomes more meaningful and memorable when students actively construct understanding through relevant and realistic tasks, which can strengthen knowledge retention.

Similarly, contextualized learning activity sheets have been shown to be effective in improving learners' academic performance across various grade levels, particularly in mathematics, by making lessons more relevant, understandable, and engaging (Solis & Pasia, 2024).

Additionally, Madrazo and Dio (2020) explored Contextual Teaching and Learning (CTL) in mathematics under blended learning, finding that students exposed to CTL experienced significantly higher gains in achievement compared to traditional teaching, emphasizing the value of situating instruction in meaningful contexts.

RESEARCH METHODOLOGY

This chapter presents the methods and procedures employed in the conduct of the study. Specifically, it discusses the research design, subject and respondents of the study, population and sample size, sampling technique, data gathering instruments, validity and reliability of the research instruments, data gathering procedure, and statistical tools used in the analysis and interpretation of data. These methodological procedures served as the basis for determining the relationship between mathematical comprehension, contextualized learning, and academic achievement of Grade 8 STVEP students.

Research Design

The study utilized a descriptive-correlational research design to examine the relationship between independent variables, namely mathematical comprehension and contextualized learning, and the dependent variable, academic achievement of Grade 8 STVEP students. Descriptive research collects data to describe population characteristics without manipulating variables (Creswell & Creswell, 2022). In this study, the independent variables included mathematical comprehension and contextualized learning, specifically in terms of use of real-life examples, relevance of lessons to daily activities, student engagement, teacher use of contextualized teaching strategies. This design was appropriate because it enabled the researcher to identify correlations between learners' comprehension, contextualized learning experiences, and academic outcomes without manipulating variables. Academic achievement served as the dependent variable and was measured using the respondents' final Mathematics grades. Correlational design was preferred over an experimental design due to ethical constraints in a school setting, such as avoiding disruption to regular instruction or potential harm from interventions.

Subject and Respondents of the Study

The subject and respondents of the study were the Grade 8 STVEP students enrolled at one of the public Junior High Schools in Negros Occidental during the school year 2025-2026. The respondents were selected from Grade 8 STVEP students to provide a representative sample of the population. A total of 137 students, comprising both male and female learners, participated in the study.

Population and Sample Size

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume X Issue VII July 2026

The total population of Grade 8 STVEP students is 208. Using the Yamane's formula with a 5% margin of error (e = 0.05), the sample size was calculated as follows:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = sample size

N = total population (208)

e = margin of error (0.05)

$$n = \frac{208}{1 + 208(0.05^2)}$$

$$n = \frac{208}{1 + 208(0.0025)}$$

$$n = \frac{208}{1 + 0.52}$$

$$n = \frac{208}{1.52}$$

$$n = 136.842105 \approx 137 \text{ students}$$

Therefore, the computed sample size was rounded to the nearest whole number, resulting in a final sample of 137 respondents, ensuring a representative sample of the population while maintaining reliability and accuracy in the findings.

Sampling Technique

The study utilized a proportionate stratified random sampling technique to select the respondents. The population was divided first into strata according to their STVEP tracks, namely Cookery, Computer Systems Servicing (CSS), Electronics, and Garments. This sampling technique ensured that each track was adequately represented in the sample according to its proportion in the total population.

The sample size for each track was computed using the formula:

$$n_i = \frac{N_i}{N_t} \times n_t$$

Where:

n_i = sample size per stratum

N_i = population per stratum

N_t = total population

n_t = total sample size

Table 1 presents the distribution of respondents per track of Grade 8 STVEP Students.

Table 1. Distribution of Respondents per Track of Grade 8 STVEP Students

STVEP Track	N	n
A	108	71
B	76	50
C	10	7
D	14	9
Total	208	137

Following the proportional allocation of respondents, simple random sampling through the lottery method was used within each stratum to select individual respondents. This procedure ensured that every student within each STVEP track had an equal chance of being selected, thereby minimizing sampling bias and enhancing the representativeness of the sample.

According to Creswell and Creswell (2022), proportionate stratified random sampling enhances the accuracy and generalizability of research findings by ensuring proportional representation of key subgroups within a population.

Data Gathering Instruments

This study used a researcher-made questionnaire as the primary instrument for gathering data. The questionnaire was developed based on the variables and indicators stated in the statement of the problem and illustrated in the schematic diagram of the study. The items were carefully constructed after reviewing related literature on mathematical comprehension and contextualized learning to ensure their relevance and alignment with the objectives of the study. Furthermore, the questionnaire was designed to suit the learning level, experiences, and context of Grade 8 STVEP students to ensure that the items were clear, understandable, and appropriate for the respondents.

The research instrument consisted of three parts. The first part consisted of a researcher-made 30-item multiple-choice Mathematical Comprehension Test based on the Department of Education MATATAG Mathematics Curriculum from the first to the fourth quarter. The test was designed to measure the respondents' mathematical comprehension. Each correct answer was assigned one (1) point, while each incorrect answer received zero (0) points. The total score obtained by each respondent represented the respondent’s level of mathematical comprehension. The test items were written in clear and simple language to ensure that the respondents could easily understand and answer each question accurately.

The second part measured the respondents' perceptions of contextualized learning in Mathematics. It consisted of twenty (20) items equally distributed among four indicators: use of real-life examples, relevance of lessons to daily activities, student engagement, and teacher use of contextualized teaching strategies, with five (5) items for each indicator. Responses were measured using a five-point Likert scale, where 5 – Strongly Agree, 4 – Agree, 3 – Neutral, 2 – Disagree, and 1 – Strongly Disagree. The Likert scale enabled the researcher to quantify the respondents' perceptions of contextualized learning and generate measurable data for statistical analysis. The mean was interpreted using the following descriptive ranges: 4.21–5.00 (Very High), 3.41–4.20 (High), 2.61–3.40 (Moderate), 1.81–2.60 (Low), and 1.00–1.80 (Very Low). These intervals were established by dividing the range of the five-point Likert scale into equal categories, ensuring consistency in the interpretation of the respondents' perceptions. While teacher contextualized practices (use of real-life examples, relevance, and strategies) represent instructional delivery, student engagement represents a distinct learner response. Subscale reliability coefficients (e.g., Cronbach's alpha for each dimension) were examined to justify combining them into one overall contextualized-learning composite score.

The third part pertained to the respondents' academic achievement, which was measured using their official final Mathematics grades obtained from the school's academic records. These grades served as the basis for determining the respondents' level of academic achievement and were used in analyzing the relationship between mathematical comprehension, contextualized learning, and academic achievement.

The research instrument was carefully developed to ensure its alignment with the objectives and variables of the study. Consequently, it was considered appropriate for gathering data needed to determine the relationship between contextualized learning and the mathematical comprehension of Grade 8 STVEP students.

Validity and Reliability of Research Instruments

The Mathematical Comprehension Test was a researcher-made 30-item multiple-choice test designed to measure the mathematical comprehension of Grade 8 STVEP students. The test was based on the learning competencies prescribed in the Department of Education (2023) MATATAG Mathematics Curriculum. The items were contextualized using real-life and technical-vocational situations related to the students' specialized track, namely Cookery, CSS, Electronics, and Garments.

A Table of Specifications based on Bloom's Taxonomy was prepared to ensure that the test items were appropriately distributed across the intended cognitive levels. Most items measured the application of mathematical concepts, while the remaining items assessed understanding and analysis skills.

The Contextualized Learning Questionnaire was likewise a researcher-made instrument developed to determine students' perceptions of contextualized learning in Mathematics. The indicators, namely the use of real-life examples, relevance of lessons to daily activities, student engagement, and teacher use of contextualized teaching strategies, were adapted from the principles of Contextual Teaching and Learning (CTL) discussed by Lago and Ortega-Dela Cruz (2021), which emphasize connecting academic content to real-world situations to promote meaningful learning, collaboration, engagement, and authentic learning experiences.

To ensure the content validity of the research instruments, the Mathematical Comprehension Test and the Contextualized Learning Questionnaire were evaluated by five (5) experts in Mathematics education, consisting of two educators with a Master of Arts in Education major in Mathematics and three doctoral-level educators. The experts assessed the relevance and essentiality of each item using Lawshe's Content Validity Ratio.

The content validation results showed complete agreement among the five experts regarding the essentiality of all items included in the research instruments. The Mathematical Comprehension Test obtained a Mean CVR of 1.00 for its 30 items, while the Contextualized Learning Questionnaire also obtained a Mean CVR of 1.00 for its 20 items. These findings indicate strong content validity, confirming that all items were considered essential and appropriate for measuring the intended variables. Therefore, the research instruments were accepted for use in the conduct of the study without requiring item revision.

To establish the reliability of the research instruments, a pilot test was conducted to Grade 8 STVEP students who were not included in the actual study. The reliability of the Mathematical Comprehension Test was determined using the test-retest method, with the pre-test and post-test scores correlated through the Pearson Product-Moment Correlation Coefficient after a two-week interval. The analysis yielded a Pearson correlation coefficient of $r = 0.429$ with a significance value of $p = 0.018$ (2-tailed). The correlation was statistically significant at the 0.05 level, indicating a moderate positive relationship between the pre-test and post-test scores. These results suggest that the Mathematical Comprehension Test demonstrated acceptable test-retest reliability and was therefore considered appropriate for use in the actual conduct of the study.

The reliability of the Contextualized Learning Questionnaire was assessed using Cronbach's alpha to determine its internal consistency. The instrument obtained a Cronbach's alpha coefficient of 0.899, indicating high internal consistency. This result shows that the questionnaire items consistently measured the intended construct were reliable for data collection.

Based on the results of the validity and reliability procedures, both research instruments were found to be valid and reliable and were therefore considered appropriate

for use in gathering data for the study.

Data Gathering Procedures

Prior to the administration of any instruments, strict ethical protocols were observed. Written informed consent was obtained from the parents or legal guardians of all participants, alongside explicit written assent from the student participants themselves. Students were assured of their anonymity and their right to withdraw from the study at any time without academic penalty.

Clear instructions were also provided to ensure that the items were properly understood and accurately answered. The respondents were given sufficient time and a comfortable environment to complete the questionnaire at their own pace, enabling them to respond thoughtfully and without pressure. After the questionnaires were retrieved, each was carefully checked for completeness and consistency of responses.

Data Analyses

The data were collected, tallied, organized, analyzed, and interpreted using appropriate descriptive and inferential statistical tools. The analyses described the respondents' profile, levels of mathematical comprehension and contextualized learning, academic achievement, and the relationships among these variables.

For problem number 1, which determines the level of mathematical comprehension of Grade 8 STVEP students, mean and standard deviation were used.

The formula for solving the mean:

$$\bar{x} = \frac{\sum x}{n}$$

Where:

$\bar{x}$ = mean

$\sum$ = summation notation

x = responses of the respondents

n = sample size

Formula for solving the Standard Deviation:

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

Where:

s = Sample standard deviation

$\sum$ = Summation

x = Each individual value in your data set

$\bar{x}$ = The mean (average) of the values

n = The total number of values (sample size)

n – 1 = The degrees of freedom

To interpret the Mathematical Comprehension scores, the interpretation guide presented below was used:

Raw Score	Interpretation
25-30	Very Good
19-24	Good
13-18	Fair
7-12	Poor
0-6	Very Poor

For problem number 2, which states the level of contextualized learning in terms of use of real-life examples, relevance of lessons to daily activities, student engagement and teacher use of contextualized teaching strategies, the mean and standard deviation were also used.

To interpret the level of Contextualized Learning, the interpretation guide presented below was used:

Scale	Agreement Level	Mean Score Range	Interpretation	Verbal Description
5	Strongly Agree	4.21 – 5.00	Very High	The instruction is very consistent and very strongly connected to real-life situations, making mathematics lessons highly relevant and engaging.
4	Agree	3.41 – 4.20	High	The instruction is consistent and strongly connected to real-life situations, making mathematics lessons relevant and engaging.
3	Neutral	2.61 – 3.40	Moderate	The instruction is sometimes connected to real-life situations, making mathematics lessons somewhat relevant and engaging.
2	Disagree	1.81 – 2.60	Low	The instruction is rarely connected to real-life situations, making mathematics lessons less relevant and engaging.
1	Strongly Disagree	1.00 – 1.80	Very Low	The instruction is minimally or not connected to real-life situations, making mathematics lessons irrelevant and unengaging.

For problem number 3, the mean and standard deviation were used to determine the level of academic achievement of Grade 8 STVEP students based on their final Mathematics grades. The grades were obtained from the official records of the school subject teacher.

To interpret the level of academic achievement, the interpretation guide based on DepEd Grading System presented below was used:

Grade Range	Interpretation
90-100	Outstanding
85-89	Very Satisfactory

80-84	Satisfactory
75-79	Fairly Satisfactory
Below 75	Did Not Meet Expectations

Source: DepEd Order No. 8, s. 2015, titled "Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program"

For problem number 4, the Spearman's Rank-Order Correlation Coefficient (r_s) was used to determine if there is a significant relationship between mathematical comprehension and academic achievement of Grade 8 STVEP students. This statistical tool was selected because the preliminary normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) indicated that the data for Mathematical Comprehension and Academic Achievement deviated from a normal distribution. Therefore, a non-parametric test was required to ensure the validity of the correlational findings.

Formula for the Spearman's rho (ρ or r_s):

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

Where:

r_s = Spearman rank correlation coefficient
d = difference between the ranks of paired scores (x and y)
n = number of respondents

In this study:
x = mathematical comprehension
y = academic achievement
n = number of respondents

For problem number 5, the Spearman's rho (ρ or r_s) was also used to determine the significant relationship between contextualized learning and academic achievement of Grade 8 STVEP students.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents, analyzes, and interprets the data gathered to determine the relationship between mathematical comprehension, contextualized learning, and academic achievement of Grade 8 Strengthened Technical-Vocational Education Program (STVEP) students at one of the public Junior High Schools in Negros Occidental during the school year 2025–2026. The findings are organized according to the statement of the problem and are presented using appropriate descriptive and inferential statistical tools. Specifically, this chapter discusses the level of mathematical comprehension, the level of contextualized learning in Mathematics, the level of academic achievement, and the significant relationships among the variables included in the study.

Level of Mathematical

Comprehension

Table 2 presents the level of mathematical comprehension of Grade 8 STVEP students based on their scores in the 30-item mathematical comprehension test.

Table 2. Level of Mathematical Comprehension of Grade 8 STVEP Students.

Level of Mathematical Comprehension of Grade 8 STVEP students	N	Mean	SD	Interpretation
Very Good	53			
Good	53			
Fair	30			
Poor	1			
Very Poor	0			
Total	137	22.23	4.37	Good

The students obtained a mean score of 22.23 out of 30 (SD = 4.37), classified as Good under the study-specific descriptive bands. This result describes performance on the researcher-made Mathematics test; it should not be treated as a wholly independent measure of mathematical achievement because the test and final Mathematics grades both assess Mathematics-related knowledge and skills.

The distribution indicates that most students scored within the Good or Very Good categories. However, the results should be interpreted as evidence of performance on this particular test rather than as a definitive measure of a distinct cognitive trait. The overlap between the test content and school Mathematics grading is especially relevant to the subsequent correlation.

This result is supported by Ho (2020), who emphasized that conceptual understanding enables learners to apply mathematical knowledge effectively in problem-solving situations. The study found that students with stronger conceptual understanding demonstrated better mathematical performance, highlighting the importance of mathematical comprehension in achieving academic success. Similarly, Luna et al. (2024) found that comprehension skills significantly predict students' ability to solve mathematical word problems. These studies support the present finding that students with stronger comprehension are more likely to perform successfully in Mathematics tasks.

Level of Contextualized Learning

Table 3 on the next page presents the respondents' perceptions of contextualized learning in Mathematics in terms of use of real-life examples, relevance of lessons to daily activities, student engagement, and teacher use of contextualized teaching strategies.

Table 3. Level of Contextualized Learning of Grade 8 STVEP Students.

Level of Contextualized Learning	Mean	SD	Interpretation
Use of Real-Life Examples	**4.27**	**0.42**	**Very High**
1. My Mathematics teacher uses real-life examples when explaining lessons.	4.50	0.60	Very High
2. The word problems we solve are based on real-life situations.	4.04	0.63	High
3. Mathematical concepts are explained using practical or vocational examples.	4.23	0.62	Very High
4. I understand how Mathematics is used in real jobs or careers.	4.28	0.70	Very High
5. Some examples in Mathematics are related to our STVEP track (e.g., Cookery, CSS, Electronics, Garments).	4.31	0.64	Very High
Relevance of Lessons to Daily Activities	**4.25**	**0.50**	**Very High**
1. Mathematics lessons are useful in my daily life.	4.41	0.71	Very High

2. Mathematics lessons help me understand real-world problems.	4.26	0.67	Very High
3. I can connect Mathematics topics to situations outside the classroom.	3.88	0.75	High
4. I see the importance of Mathematics in real-life situations.	4.18	0.67	High
5. I believe Mathematics will be helpful for my future career.	4.52	0.64	Very High
Student Engagement	**3.98**	**0.52**	**High**
1. I participate more when Mathematics lessons include real-life examples.	3.91	0.72	High
2. I understand difficult mathematical concepts better when the lessons are applied to real-life situations.	3.86	0.74	High
3. I feel motivated to solve problems connected to my STVEP track.	3.99	0.73	High
4. I work well with my classmates during real life Mathematics activities.	4.17	0.71	High
5. I focus better when Mathematics lessons involve practical applications.	3.96	0.69	High
Level of Contextualized Learning	Mean	SD	Interpretation
Teacher Use of Contextualized Teaching Strategies	**4.32**	**0.51**	**Very High**
1. My teacher connects Mathematics lessons to practical, real-life problems.	4.31	0.65	Very High
2. My teacher provides opportunities for hands-on learning.	4.34	0.66	Very High
3. My teacher encourages collaborative problem-solving activities.	4.30	0.66	Very High
4. My teacher uses examples that relate Mathematics to vocational skills.	4.36	0.60	Very High
5. My teacher integrates real-life situations in quizzes and exercises.	4.27	0.66	Very High
Contextualized Learning as a whole	**4.20**	**0.38**	**High**

Table 3 continued

Table 3 (continued on next page)

Legends: (4.21-5.0)-Very High; (3.41-4.20)-High; (2.61-3.40)-Moderate; (1.81-2.60)-Low; (1.00-1.80)-Very Low

Overall, the respondents perceived contextualized learning in Mathematics to be High (M = 4.20, SD = 0.38). The relatively small standard deviation indicates very low variability in the responses, suggesting that the respondents shared highly consistent perceptions regarding the implementation of contextualized learning in their Mathematics classes.

Among the four dimensions, Teacher Use of Contextualized Teaching Strategies obtained the highest mean (M = 4.32, SD = 0.51), interpreted as very high. The standard deviation indicates that the respondents generally agreed that their teacher consistently employed contextualized teaching strategies during Mathematics instruction. This suggests that teachers regularly integrated practical and meaningful learning experiences into classroom activities.

The Use of Real-Life Examples also received a very high rating (M = 4.27, SD = 0.42). The very low standard deviation indicates a high degree of consistency in the respondents' answers, implying that most students recognized their teachers' consistent use of real-life and vocational examples to explain mathematical concepts.

Similarly, Relevance of Lessons to Daily Activities obtained a very high rating (M = 4.25, SD = 0.50). The relatively low variability in the responses indicates that the students generally shared similar perceptions regarding the usefulness of Mathematics in their daily lives and future careers. This suggests that the lessons were viewed as meaningful and applicable beyond the classroom.

Meanwhile, Student Engagement recorded the lowest mean among the four dimensions (M = 3.98, SD = 0.52), although it remained within the high descriptive level. The low standard deviation indicates that the respondents

generally agreed that contextualized learning enhanced their participation, motivation, and attention during Mathematics lessons. The slightly higher variability compared with the other dimensions suggests that students differed somewhat in the extent to which contextualized instruction influenced their engagement, although their responses remained generally consistent.

At the item level, standard deviations ranged from 0.60 to 0.75, indicating low variability in responses across all statements. This means that the respondents' perceptions were relatively consistent, with only slight differences in their responses. The highest variability was observed in the statement, "I can connect Mathematics topics to situations outside the classroom" (SD = 0.75), suggesting that students varied somewhat in their ability to apply mathematical concepts beyond the classroom setting. Conversely, the lowest variability was found in the statement, "My Mathematics teacher uses real-life examples when explaining lessons" (SD = 0.60), indicating stronger agreement among the respondents regarding this instructional practice.

Overall, the findings indicate that contextualized learning practices were strongly evident in Mathematics instruction and were positively perceived by the Grade 8 STVEP students. The consistently high ratings and relatively small standard deviations suggest that teachers effectively connected mathematical concepts to students' real-life experiences, daily activities, and technical-vocational specializations. Consequently, students generally viewed Mathematics as more relevant, meaningful, and applicable to authentic situations.

The findings are consistent with the work of Jo Boaler (2022), who asserted that students develop a deeper understanding of Mathematics when concepts are presented through meaningful and authentic contexts. Likewise, Gloria Ladson-Billings (2021) emphasized that relevant instruction enables learners to connect academic content with their own experiences, resulting in greater understanding and engagement. Similarly, Cambaya and Tan (2022) reported that contextualized teaching enhances students' understanding of mathematical concepts by making learning more engaging and applicable to real-life situations. These studies support the present findings that contextualized learning fosters positive student perceptions by making Mathematics more relevant, practical, and meaningful.

Level of Academic Achievement

Table 4 on the next page presents the level of academic achievement of Grade 8 STVEP students based on their final Mathematics grades.

Table 4. Level of Academic Achievement of Grade 8 STVEP Students

Level of Academic Achievement of Grade 8 STVEP students	N	Mean	SD	Interpretation
Outstanding	108			
Very Satisfactory	26			
Satisfactory	3			
Fairly Satisfactory	0			
Did not meet expectations	0			
Total	137	92.04	3.40	Outstanding

The respondents obtained an overall mean grade of 92.04, with a standard deviation of 3.40, interpreted as Outstanding. This indicates that the students demonstrated excellent academic performance in Mathematics.

The results suggest that the Grade 8 STVEP students generally performed very well in Mathematics. Their high academic achievement may be associated with their good level of mathematical comprehension in their Mathematics classes.

According to Anita Woolfolk (2022), academic achievement is influenced by a combination of cognitive abilities, motivation, and the quality of instruction. Similarly, John Hattie (2023) emphasized that teacher clarity, effective feedback, and active student engagement are among the strongest contributors to student achievement. The respondents' high level of mathematical comprehension and favorable perceptions of contextualized learning may be associated with their outstanding academic performance.

Overall, the findings indicate that the respondents demonstrated outstanding academic achievement in Mathematics. This high level of performance is consistent with the observed good level of mathematical comprehension and favorable perceptions of contextualized learning, although only mathematical comprehension was found to be significantly related to achievement in the subsequent correlation analysis.

Relationship Between Mathematical Comprehension and Academic Achievement

Table 5 shows the relationship between mathematical comprehension and academic achievement of Grade 8 STVEP students in Mathematics.

Table 5. Relationship Between Mathematical Comprehension and Academic Achievement of Grade 8 STVEP Students

Variables	Test Statistics (r_s)	p-value	Decision for Ho	Interpretation
Mathematical Comprehension vs Academic Achievement	0.882**	< 0.001	Reject Ho	Significant

The Spearman's rho was 0.882 with a p-value of < 0.001. This indicates a very strong positive correlation and statistically significant relationship between mathematical comprehension and academic achievement.

Since the p-value is less than the 0.01 level of significance, the null hypothesis stating that there is no significant relationship between mathematical comprehension and academic achievement is rejected.

Students who obtained higher scores on the mathematical comprehension test also tended to have higher final Mathematics grades. This finding demonstrates a strong association in the present sample; it does not establish that mathematical comprehension independently causes higher grades. Measurement overlap, common curriculum content, and grading practices may partly contribute to the observed correlation.

This finding is consistent with previous studies. Akin (2022) found that students who have strong reading and comprehension skills also tend to perform better in Mathematics. One possible explanation is that it also involves understanding word problems, instructions, and mathematical language. Lin and Powell (2022) reported that reading and cognitive skills are significant predictors of Mathematics performance, highlighting the important role of comprehension in solving mathematical problems accurately.

The cited literature supports the relevance of comprehension to mathematical problem solving. Nevertheless, the present result should be interpreted more narrowly: the study demonstrates a strong association between performance on a Mathematics comprehension test and final Mathematics grades, with possible measurement overlap.

Relationship Between Contextualized Learning and Academic Achievement

Table 6 below shows the relationship between contextualized learning and academic achievement of Grade 8 STVEP students in Mathematics.

Table 6. Relationship Between Contextualized Learning and Academic Achievement of Grade 8 STVEP students

Variables	Test Statistics (r_s)	p-value	Decision for Ho	Interpretation
Contextualized Learning vs Academic Achievement	-0.032	0.710	Failed to Reject Ho	Not Significant

The computed Spearman's rho was –0.032 with a p-value of 0.710. Because p = .710 exceeds the study's significance level, the null hypothesis was not rejected. There was no statistically significant association between students' perceptions of contextualized learning and their final Mathematics grades (r_s = −.032, p = .710). There was no statistically significant association between students' perceptions of contextualized learning and their final Mathematics grades (r_s = −.032, p = .710). The descriptive findings indicate that students generally rated the contextualized-learning items highly, but these ratings were not associated with final grades in this sample. This null association should not be interpreted as evidence that contextualization lacks educational value. The restricted range of the contextualized-learning ratings and the high concentration of final grades may have reduced the observable correlation. In addition, contextualized instructional practices and student engagement may have different relationships with achievement that were not examined separately in the original composite analysis.

A similar finding was reported by Nasayao and Lingo (2023), who found that positive attitudes and teaching strategies did not always show a direct relationship with students' grades. Moreover, Eccles and Wigfield (2020) explained that while contextualized instruction can increase motivation and interest, achievement also depends on learners' prior knowledge and cognitive skills. Woolfolk (2022) also emphasized that academic performance is shaped by multiple factors. Thus, although students highly valued contextualized instruction, mathematical comprehension appeared to be more strongly associated with achievement in this study.

Thus, within this sample and under the measures used, mathematical comprehension scores showed a much stronger association with final Mathematics grades than the overall contextualized-learning composite. The comparison should not be interpreted as evidence that comprehension is inherently more educationally important than contextualization because the two constructs were measured differently and the comprehension–grade association may be inflated by measurement overlap.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations of the study.

Summary of the Findings

Based on the results of the study, the following findings were obtained:

1. The Grade 8 STVEP students obtained an overall mathematical comprehension score of M = 22.23 (SD = 4.37), classified as Good under the study-specific score bands. The category distribution showed 53 students (38.7%) in Very Good, 53 (38.7%) in Good, 30 (21.9%) in Fair, 1 (0.7%) in Poor, and none in Very Poor.
2. Students reported generally high levels of contextualized instructional practices and engagement (overall M = 4.20, SD = 0.38). The results describe students' perceptions rather than objective observations of teacher practice. The four dimensions were use of real-life examples, relevance of lessons to daily activities, student engagement, and teacher use of contextualized teaching strategies.
3. The students' final Mathematics grades had an overall mean of M = 92.04 (SD = 3.40), classified as Outstanding. Of the 137 students, 108 (78.8%) were Outstanding, 26 (19.0%) were Very Satisfactory, 3 (2.2%) were Satisfactory, and none were in the lower two categories. The concentration of grades at the upper end suggests possible range restriction.
4. A strong and significant relationship was found between mathematical comprehension and academic achievement, with a Spearman's rho (rs) = 0.882 and a p-value of < 0.001 which is less than 0.01 level of

significance. This led to the rejection of the null hypothesis (Ho). It means that students with higher mathematical comprehension tend to achieve higher academic performance.

5. The results showed no significant relationship between contextualized learning and academic achievement, with a Spearman's rho (rs) = -0.032 with a p-value of 0.710 which is greater than 0.01 level of significance. This led to the failure to reject the null hypothesis (Ho). Although students perceived contextualized learning positively, no statistically significant relationship was found between contextualized learning and academic achievement in this study.

CONCLUSIONS

Based on the findings, the following conclusions were drawn:

1. The Grade 8 STVEP students are capable of understanding mathematical concepts, solving problems, and applying learned skills effectively. Their performance suggests that they possess the necessary foundation in Mathematics, although there is still room for further improvement, especially for those in the lower comprehension levels.
2. Contextualized learning is highly evident in Mathematics instruction and positively perceived by the students. Teachers consistently integrate real-life situations, vocational examples, and collaborative activities. However, student engagement appears to depend on individual motivation and learning readiness, suggesting that instructional effectiveness may vary among learners.
3. The academic achievement of Grade 8 STVEP students is generally outstanding. Most students performed well in Mathematics, indicating strong academic performance overall.
4. There is a strong and significant relationship between mathematical comprehension and academic achievement.
5. While there was no statistically significant relationship found between overall contextualized learning and academic achievement, this does not imply that contextualization lacks educational value. Students highly perceived its presence, suggesting it plays a critical role in fostering engagement and making abstract concepts accessible, even if it operates differently than cognitive comprehension in directly impacting final grades.
6.

Recommendations

Based on the conclusions, the following recommendations are proposed:

1. Mathematics teachers are encouraged to provide sustained opportunities for students to develop mathematical comprehension through comprehension-based word problems, guided questioning, step-by-step problem-solving, mathematical discussions, and activities that require learners to analyze, interpret, explain, and justify mathematical solutions. Particular attention should be given to students who demonstrate lower levels of mathematical comprehension through differentiated instruction, remediation, and targeted learning activities.
2. Mathematics teachers are encouraged to continue integrating contextualized learning strategies aligned with students' daily experiences and STVEP tracks. To maximize impact, contextualized tasks should be intentionally structured to go beyond student engagement by emphasizing higher-order thinking, mathematical reasoning, and conceptual depth.
3. Students are encouraged to sustain their strong academic performance by actively participating in Mathematics activities, regularly practicing problem-solving, reviewing mathematical concepts, and seeking assistance when difficulties arise. Mathematics teachers may provide enrichment activities for students who demonstrate advanced achievement while implementing appropriate remediation and intervention activities for learners who require additional academic support.
4. School administrators, Mathematics supervisors, and department heads may provide professional development activities, coaching, collaborative lesson planning, peer observations, and Learning Action Cell (LAC) sessions focused on strategies for strengthening mathematical comprehension and problem-solving skills. Regular instructional monitoring may also be conducted to support the effective implementation of comprehension-based teaching practices.

5. Curriculum implementers may consider strengthening the integration of contextualized learning with activities that explicitly develop mathematical comprehension and higher-order thinking. Contextualized tasks should connect real-life and vocational applications with opportunities for learners to interpret, reason, analyze, solve, and communicate mathematical ideas.
6. Future researchers may investigate other variables that could be associated with students' academic achievement, such as study habits, motivation, prior knowledge, learning strategies, parental support, and other cognitive or instructional factors. Further research may also examine how specific forms of contextualized learning can be designed and implemented to produce measurable improvements in mathematical achievement.

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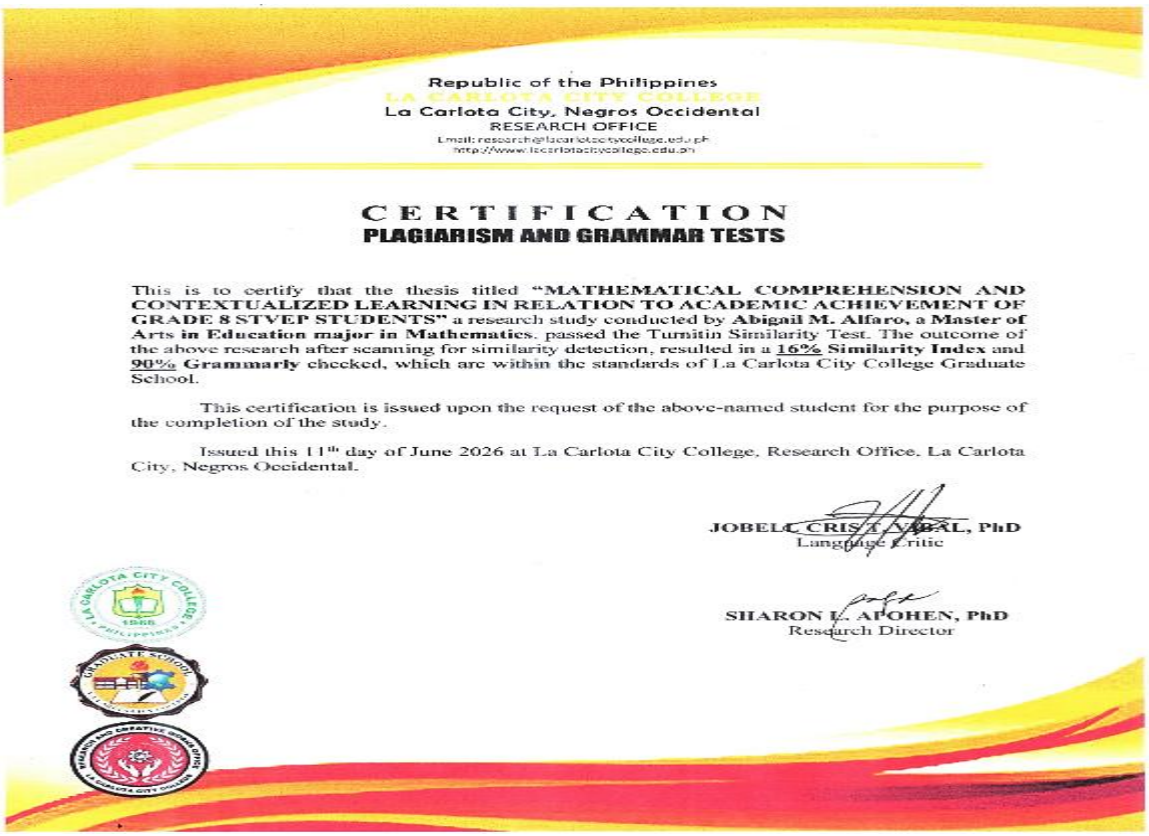
APPENDICES

Appendix A.1



Republic of the Philippines
LA CARLOTA CITY COLLEGE
La Carlota City, Negros Occidental
RESEARCH OFFICE
Email: research@lacarlotacitycollege.edu.ph
http://www.lacarlotacitycollege.edu.ph

CERTIFICATION
PLAGIARISM AND GRAMMAR TESTS

This is to certify that the thesis titled **"MATHEMATICAL COMPREHENSION AND CONTEXTUALIZED LEARNING IN RELATION TO ACADEMIC ACHIEVEMENT OF GRADE 8 STVEP STUDENTS"** a research study conducted by **Abigail M. Alfaro, a Master of Arts in Education major in Mathematics**, passed the Turnitin Similarity Test. The outcome of the above research after scanning for similarity detection, resulted in a **16% Similarity Index** and **90% Grammarly** checked, which are within the standards of La Carlota City College Graduate School.

This certification is issued upon the request of the above-named student for the purpose of the completion of the study.

Issued this 11th day of June 2026 at La Carlota City College, Research Office, La Carlota City, Negros Occidental.

JOBELL CRIST T. ABAL, PhD
Language Critic

SHARON L. APOHEN, PhD
Research Director

Certification of Plagiarism and Grammar Test Result

Appendix A.2

Certification of Ethics Committee

Republic of the Philippines
LA CARLOTA CITY COLLEGE
La Carlota City, Negros Occidental
RESEARCH AND CREATIVE WORKS OFFICE
email: research@lacarlotacitycollege.edu.ph
http://www.lacarlotacitycollege.edu.ph

CERTIFICATION
ETHICS COMMITTEE

Date: March 13, 2026

ERMI V. MIRANDA, PhD, CESO VI
Chairperson, Research Ethics Committee
Graduate School, La Carlota City College
La Carlota City

S I R :

I would like to seek approval from your good office to conduct the study titled: "Mathematical Comprehension and Contextualized Learning in Relation to Academic Achievement of Grade 8 STVEP Students"

The Ethical Standard Policy is strictly followed. Each of the following had been observed and preserved:

1) The study title has been carefully checked to make sure it is accurate, relevant, and in line with the Ethical Standard Policy.
2) All participants will be respected regardless of race, religion, gender, sexual orientation, maternity, marital status, family status, disability, age, or place of origin.
3) Participation will be voluntary, without pressure or influence.
4) All information collected will be kept confidential, with no invasion of privacy.
5) The names and identities of participants will not be revealed in any part of the study.
6) The dignity and well-being of participants will be protected at all times.
7) All sources of information will be properly cited and referenced to maintain honesty in academic work.
8) The researchers declare that there is no conflict of interest in relation to this study.
9) Participants will be informed about the purpose of the study, the procedures involved, and the possible benefits, especially its contribution to improving education and quality of life.
10) The researcher worked on her own Thesis. She did not pay anyone to write such in behalf of her.

ABIGAIL M. ALFARO
Researcher

Noted by:

MA. QUINCY D. DONES, PhD
Adviser

Recommending Approval:

SHARON L. APOHEN, PhD
Research Director

Approved:

ERMI V. MIRANDA, PhD, CESO VI
Chairperson, Research Ethics Committee

Appendix A.3

Certification of Statistical Data Analysis

Republic of the Philippines
LA CARLOTA CITY COLLEGE
La Carlota City, Negros Occidental
RESEARCH OFFICE

CERTIFICATION
STATISTICAL DATA ANALYSIS

This is to certify that the thesis titled **"MATHEMATICAL COMPREHENSION AND CONTEXTUALIZED LEARNING IN RELATION TO ACADEMIC ACHIEVEMENT OF GRADE 8 STVEP STUDENTS"** a research study conducted by **Abigail M. Alfaro, a Master of Arts in Education major in Mathematics**, has employed appropriate statistical treatment as validated and analyzed by the undersigned.

This certification is issued upon the request of the above-named student for the purpose of the completion of the study.

Issued this 11th day of June 2026 at La Carlota City College, Research Office, La Carlota City, Negros Occidental.

MA. QUINCY D. DONES, PhD
Statistician

SHARON L. APOHEN, PhD
Research Director

Appendix B.1

Letter to Conduct the Study Addressed to the Schools Division Superintendent of La Carlota City

March 11, 2026

ERMI V. MIRANDA PhD, CESO VI
Schools Division Superintendent
Division of La Carlota City
La Carlota City

Dear Dr. Miranda:

Warm greetings.

I respectfully request permission from your good office to conduct a research study entitled ***"Mathematical Comprehension and Contextualized Learning in Relation to the Academic Achievement of Grade 8 STVEP Students"***. This study is being undertaken in partial fulfillment of the requirements for the degree Master of Arts in Education, Major in Mathematics, at La Carlota City College Graduate School.

In this regard, I would like to ask approval to conduct data gathering and reliability testing of the research instrument among selected Grade 8 STVEP students of Doña Hortencia Salas Benedicto National High School. The study aims to determine the relationship between mathematical comprehension and contextualized learning in relation to the students' academic achievement.

Rest assured that all information gathered will be treated with strict confidentiality and will be used solely for academic purposes. The conduct of the study will not disrupt regular classes and will follow all existing policies and ethical standards set by the Department of Education.

Your favorable consideration of this request will be greatly appreciated. Thank you very much.

Respectfully yours,

ABIGAIL M. ALFARO
DHSBNHS-JHS Teacher II, Mathematics
MAEd Candidate

Noted:
MA. QUINCY D. DONES, PhD
Research Adviser

Attested:
MAYLIN M. TONGCUA, PhD
Dean, Graduate School and
OIC Vice President for Academic Affairs

Approved:
ERMI V. MIRANDA PhD, CESO VI
Schools Division Superintendent
Division of La Carlota City

Appendix B.2Letter of Approval to the Vice Presid Affairs of La Carlota City College

March 9, 2026

MAYLIN M. TONGCUA, PhD
Dean, Graduate School
La Carlota City College
La Carlota City

Dear Dr. Maylin:

Greetings!

I am currently conducting a thesis entitled ***"Mathematical Comprehension and Contextualized Learning in Relation to Academic Achievement of Grade 8 STVEP Students."*** The study aims to examine the relationship between mathematical comprehension, contextualized learning, and the academic achievement of Grade 8 STVEP students. The findings are expected to provide valuable insights that may enhance instructional strategies, strengthen contextualized learning approaches, and support evidence-based school improvement initiatives.

In this regard, I respectfully seek your permission to allow me to conduct my study and administer my questionnaire to the respondents. Rest assured that all information gathered will be treated with utmost confidentiality and will be used solely for academic and research purposes. No individual or institutional identities will be disclosed in any report or publication resulting from this study.

Your kind approval and support will not only be highly appreciated but will also play a crucial role in advancing research that could inform and enhance institutional policies. Thank you very much for considering this request and for your commitment to academic excellence.

Respectfully yours,

ABIGAIL M. ALFARO
Researcher

Noted:

MA. QUINCY D. DONES, PhD
Research Adviser

Approved:

MAYLIN M. TONGCUA, PhD
Dean, Graduate School and
OIC Vice President for Academic Affairs

Appendix B.3

Letter for the Research Instrument Validator

March 9, 2026

ERNALYN A. LIMBAGA, MAEd
Teacher III, Mathematics
DHSBNHS
La Carlota City

Madam:

Greetings!

I am **ABIGAIL M. ALFARO**, a teacher at Doña Hortencia Salas Benedicto National High School, currently conducting a research study entitled ***"Mathematical Comprehension and Contextualized Learning in Relation to the Academic Achievement of Grade 8 STVEP Students"*** under the guidance of my research adviser, Ma. Quincy D. Dones, PhD.

I respectfully seek your assistance as a validator of my research instrument. Your expertise will greatly contribute to ensuring its clarity, accuracy, and content validity. Please be assured that all feedback and evaluations will be treated with strict confidentiality. Your support and professional insight will be invaluable to the successful completion of this study.

Your approval of this humble undertaking will be highly appreciated and will serve as a significant contribution to the Department of Education's commitment to quality research and instruction.

Respectfully yours,

ABIGAIL M. ALFARO
Researcher

Noted:

MA. QUINCY D. DONES, PhD
Research Adviser

Attested:

MAYLIN M. TONGCUA, PhD
Dean, Graduate School and
OIC Vice President for Academic Affairs

Approved:

ERNALYN A. LIMBAGA, MAEd
Teacher III, Mathematics

Appendix C

Research Instrument Validation Form

Using the content Validity (CVR) devise by C.H. Lawshe (1975), kindly rate each item in the instrument by responding to the question for each of the items. Is the skill or knowledge measured by this item (a) Essential, (b) Useful but not essential, or (c) Not necessary to the measurement of **Mathematical Comprehension and Contextualized Learning of Grade 8 STVEP Students.**

Kindly check the appropriate rating scale on the blank that corresponds to your response.

ITEMS	Essential	Useful but not Essential	Not Necessary	Comment
Mathematical Comprehension				
A dressmaking student records the time (in hours) it takes to finish 5 custom tote bags: 7, 9, 8, 10, and 6. What is the mean time required to finish a bag? A. 6 B. 7 C. 8 D. 9				
Which measure of central tendency is the most reliable to use when there is an extreme outlier in an ungrouped data set? A. Mean B. Median C. Mode D. Range				
A carpentry student measures 6 wooden boards for a project. Their lengths in feet are 7, 3, 9, 4, 11, and 5. Find the median length of the boards. A. 5 B. 6 C. 7 D. 9				
A shoe store owner wants to stock up on inventory and needs to know which shoe size is most frequently bought by customers. Which measure should they compute? A. Mean B. Median C. Mode D. Variance				
The test scores of five students are 10, 12, 14, 15, and 19. If the teacher decides to add 2 bonus points to every student's score, how will this affect the mean and the range of the data set? A. Both the mean and the range will increase by 2. B. The mean will remain the same, but the range will increase by 2. C. The mean will increase by 2, but the range will remain the same. D. Both the mean and the range will remain exactly the same.				
An electronics student calculates the total resistance of two circuits. Circuit A has a resistance represented by $(5x + 2)$ ohms, and Circuit B has $(4x - 6)$ ohms. What is the total combined algebraic resistance of the two circuits? A. $x - 4$ B. $9x - 4$ C. $x + 8$ D. $9x + 8$				
A computer hardware student is calculating the processing speed of a microchip. If the calculation requires simplifying the expression $\frac{15x^5y^2}{3x^2y}$, what is the simplified expression using the laws of exponents? A. $5x^7y^4$ B. $5x^3y^2$ C. $12x^3y^2$ D. $18x^7y^4$				
A landscaping student is designing a rectangular garden bed. If the length is $(x + 3)$ meters and the width is $(x - 3)$ meters, what is the special product that represents the total area of the garden? A. $x^2 - 9$ B. $x^2 + 9$ C. $x^2 - 12x - 9$ D. $x^2 - 6x + 9$				

A drafting student is given the area of a perfectly square workshop floor as $x^2 - 10x + 25$ square meters. Factor this completely to find the expression representing the side length of the room. A. $(x - 5)(x - 5)$ B. $(x - 5)^2$ C. $(x - 5)^2$ D. $x(x - 10) + 25$				
Looking for patterns, what is the next term in the sequence: 2, 6, 12, 20, 30? A. 38 B. 40 C. 42 D. 46				
In a blueprint reading class, a student plots the location of two electrical outlets on a Cartesian coordinate grid at (1, 2) and (4, 6). Using the distance formula, what is the exact distance between the two outlets in units? A. 4 units B. 5 units C. 7 units D. 25 units				
A plumbing student is installing a water pipe that connects a main valve at coordinates (-2, 4) to a sink at (6, -8). Find the coordinates of the exact midpoint where a support bracket should be placed. A. (2, -2) B. (4, -4) C. (8, -12) D. (-4, 6)				
A seller bought a customized bag for 500 pesos and sold it for 750 pesos. What is the seller's profit percentage? A. 25% B. 33% C. 50% D. 150%				
Store A sells a 2-liter bottle of fabric conditioner for 120 pesos. Store B sells a 1.5-liter bottle of the same brand for 96 pesos. Which is the "best buy"? A. Store A, because it costs 60 pesos per liter. B. Store B, because it costs 64 pesos per liter. C. Store A, because it is more expensive. D. Store B, because 96 pesos is a lower total price.				
You want to buy a smartphone priced at 20,000 pesos in cash. You are offered an installment plan (buying on terms) of 5,000 pesos down payment and 12 monthly payments of 1,500 pesos. How much more expensive is the installment plan? A. 1,500 pesos B. 3,000 pesos C. 5,000 pesos D. 18,000 pesos				
A culinary student is baking perfectly spherical cake pops. If each cake pop mold has a radius of 3 cm, what is the volume of cake batter needed to fill one mold completely? A. 9π cm³ B. 27π cm³ C. 36π cm³ D. 108π cm³				
A metalworks student is fabricating a steel funnel in the shape of a cone. If the base radius is 4 cm and the height is 9 cm, what is the maximum volume of liquid the funnel can hold? A. 12π cm³ B. 36π cm³ C. 48π cm³ D. 144π cm³				
A construction student is building a wooden ramp. The vertical height of the ramp is 5 cm, and the horizontal base is 12 cm. Using the Pythagorean theorem, what is the length of the sloping surface (hypotenuse)? A. 13 cm B. 14 cm C. 15 cm D. 17 cm				
A ladder 10 meters long leans against a wall. The base of the ladder is 6 meters from the wall. How high up the wall does the ladder reach? A. 4 meters B. 8 meters C. 12 meters D. 16 meters				

According to the Triangle Inequality Theorem, which of the following sets of side lengths can form a triangle? A. 3 cm, 4 cm, 8 cm C. 7 cm, 8 cm, 14 cm B. 5 cm, 6 cm, 11 cm D. 2 cm, 2 cm, 5 cm				
An agriculture student is analyzing a linear model of crop growth represented by the equation $3x + y = 12$, where x represents weeks and y represents height. What is the slope (m) of this equation, which indicates the rate of growth? A. -3 B. 3 C. -1/3 D. 1/3				
A system of linear equations is graphed, and the two lines intersect at exactly one point. What does this indicate? A. The system has exactly one solution. B. The system has infinite solutions. C. The system has no solution. D. The lines are parallel.				
You have 500 pesos to buy burgers (50 pesos each) and fries (30 pesos each). Let x be the number of burgers and y be the number of fries. Which inequality represents your budget constraint? A. $50x + 30y \leq 500$ B. $50x + 30y \geq 500$ C. $50x - 30y < 500$ D. $30x + 50y = 500$				
A welding student graphs the maximum safe heat levels for a project using the boundary line for the inequality $y > 2x - 3$. Should this boundary line be drawn as a solid or dashed line, and which side should be shaded? A. A solid line, shaded below. B. A solid line, shaded above. C. A dashed line, shaded below. D. A dashed line, shaded above				
If two linear equations have the exact same slope but different y-intercepts, their graphs will be: A. Intersecting lines C. Parallel lines B. Perpendicular lines D. The same line				
A quality control student in a manufacturing class randomly tests a batch of 6 identical machine parts labeled 1 through 6. What is the theoretical probability that they will select a part with a label number greater than 4? A. 1/6 C. 3/6 (or 1/2) B. 2/6 (or 1/3) D. 4/6 (or 2/3)				
A weather forecaster says there is a 30% chance of rain tomorrow. What is the probability that it will NOT rain? A. 30% B. 50% C. 70% D. 100%				
If you flip a coin 50 times and it lands on heads 20 times, what is the experimental probability of getting heads? A. ½ B. 2/5 C. 3/5 D. 1				
Based on the Fundamental Counting Principle, if you have 4 shirts, 3 pants, and 2 pairs of shoes, how many unique outfits can you form? A. 9 B. 12 C. 14 D. 24				

What is the main difference between experimental and theoretical probability? A. Theoretical probability is based on what actually happens in a trial; experimental is what is mathematically expected. B. Experimental probability is based on actual trials; theoretical probability is based on mathematical expectations. C. Theoretical probability is always higher than experimental probability. D. They are completely identical in all situations.				
Contextualized Learning				
a. Use of Real-Life Examples				
My mathematics teacher uses real-life examples when explaining lessons.				
The word problems we solve are based on real-life situations.				
Mathematical concepts are explained using practical or vocational examples.				
I can see how mathematics is used in real jobs or careers.				
Some examples in math are related to our STVEP track (e.g., Cookery, ICT, Electronics, Garments).				
b. Relevance of Lessons to Daily Activities				
Mathematics lessons are useful in my daily life.				
Mathematics lessons help me understand real-world problems.				
I can connect math topics to situations outside the classroom.				
I see the importance of math in real-life situations.				
I believe mathematics will be helpful for my future career.				
c. Student Engagement				
I participate more when math lessons include real-life examples.				
I feel more interested in math when lessons relate to real situations.				
I am more motivated to solve problems connected to my STVEP specialization.				
I work well with my classmates during contextualized math activities.				
I focus better when math lessons involve practical applications.				
d. Teacher Use of Contextualized Teaching Strategies				
My teacher connects math lessons to practical, real-life problems.				
My teacher provides opportunities for hands-on learning.				
My teacher encourages collaborative problem-solving activities.				
My teacher uses examples that relate math to vocational skills.				
My teacher integrates real-life situations in quizzes and exercises.				

Comments/Suggestions and Modifications:

_____

_____

_____

Validator:

_____

Signature over Printed Name

Appendix D

Survey Questionnaire

Mathematical Comprehension, Contextualized Learning, and Academic Achievement of Students

Purpose: This questionnaire aims to gather information about your experiences and abilities in Mathematics, specifically your mathematical comprehension and your perception of contextualized learning in class. Your responses will remain confidential and will be used only for academic purposes.

General Instructions:
Please answer the following questions honestly.

For Part I, select the best answer from the options provided for each mathematics problem.

For Part II, indicate your level of agreement by putting a check (✓) in the box that best matches your opinion. Use the scale provided in the table headers:

Scale:
5 – Strongly Agree
4 – Agree
3 – Neutral
2 – Disagree
1 – Strongly Disagree

Part I: Questionnaire for Mathematical Comprehension

For the following mathematics problems, encircle the letter of the correct answer.

1. A dressmaking student records the time (in hours) it takes to finish 5 custom tote bags: 7, 9, 8, 10, and 6. What is the mean time required to finish a bag?

A. 6 B. 7 C. 8 D. 9

2. Which measure of central tendency is the most reliable to use when there is an extreme outlier in an ungrouped data set?

A. Mean B. Median C. Mode D. Range

3. A carpentry student measures 6 wooden boards for a project. Their lengths in feet are 7, 3, 9, 4, 11, and 5. Find the median length of the boards.

A. 5 B. 6 C. 7 D. 9

4. A shoe store owner wants to stock up on inventory and needs to know which shoe size is most frequently bought by customers. Which measure should they compute?

A. Mean B. Median C. Mode D. Variance

5. The test scores of five students are 10, 12, 14, 15, and 19. If the teacher decides to add 2 bonus points to every student's score, how will this affect the mean and the range of the data set?

A. Both the mean and the range will increase by 2.

B. The mean will remain the same, but the range will increase by 2.

C. The mean will increase by 2, but the range will remain the same.

D. Both the mean and the range will remain exactly the same.

6. An electronics student calculates the total resistance of two circuits. Circuit A has a resistance represented by (5x + 2) ohms, and Circuit B has (4x - 6) ohms. What is the total combined algebraic resistance of the two circuits?

A. x – 4 B. 9x – 4 C. x + 8 D. 9x + 8

7. A computer hardware student is calculating the processing speed of a microchip. If the calculation requires simplifying the expression $\frac{15x^5y^3}{3x^2y}$, what is the simplified expression using the laws of exponents?

A. $5x^7y^4$ B. $5x^3y^2$ C. $12x^3y^2$ D. $18x^7y^4$

8. A landscaping student is designing a rectangular garden bed. If the length is (x + 3) meters and the width is (x - 3) meters, what is the special product that represents the total area of the garden?

A. $x^2 – 9$ B. $x^2 + 9$ C. $x^2 - 12x – 9$ D. $x^2 - 6x + 9$

9. A drafting student is given the area of a perfectly square workshop floor as $x^2 - 10x + 25$ square meters. Factor this completely to find the expression representing the side length of the room.

A. (x - 5) (x + 5) B. $(x + 5)^2$ C. $(x - 5)^2$ D. x (x - 10) + 25

10. Looking for patterns, what is the next term in the sequence: 2, 6, 12, 20, 30, __?

A. 38 B. 40 C. 42 D. 46

11. In a blueprint reading class, a student plots the location of two electrical outlets on a Cartesian coordinate grid at (1, 2) and (4, 6). Using the distance formula, what is the exact distance between the two outlets in units?

A. 4 units B. 5 units C. 7 units D. 25 units

12. A plumbing student is installing a water pipe that connects a main valve at coordinates (-2, 4) to a sink at (6, -8). Find the coordinates of the exact midpoint where a support bracket should be placed.

A. (2, -2) B. (4, -4) C. (8, -12) D. (-4, 6)

13. A seller bought a customized bag for 500 pesos and sold it for 750 pesos. What is the seller's profit percentage?

A. 25% B. 33% C. 50% D. 150%

14. Store A sells a 2-liter bottle of fabric conditioner for 120 pesos. Store B sells a 1.5-liter bottle of the same brand for 96 pesos. Which is the "best buy"?

A. Store A, because it costs 60 pesos per liter.

B. Store B, because it costs 64 pesos per liter.

C. Store A, because it is more expensive.

D. Store B, because 96 pesos is a lower total price.

15. You want to buy a smartphone priced at 20,000 pesos in cash. You are offered an installment plan (buying on terms) of 5,000 pesos down payment and 12 monthly payments of 1,500 pesos. How much more expensive is the installment plan?

A. 1,500 pesos B. 3,000 pesos C. 5,000 pesos D. 18,000 pesos

16. A culinary student is baking perfectly spherical cake pops. If each cake pop mold has a radius of 3 cm, what is the volume of cake batter needed to fill one mold completely?

A. 9π cm³ B. 27π cm³ C. 36π cm³ D. 108π cm³

17. A metalworks student is fabricating a steel funnel in the shape of a cone. If the base radius is 4 cm and the height is 9 cm, what is the maximum volume of liquid the funnel can hold?

A. 12π cm³ B. 36π cm³ C. 48π cm³ D. 144π cm³

18. A construction student is building a wooden ramp. The vertical height of the ramp is 5 cm, and the horizontal base is 12 cm. Using the Pythagorean theorem, what is the length of the sloping surface (hypotenuse)?

A. 13 cm B. 14 cm C. 15 cm D. 17 cm

19. A ladder 10 meters long leans against a wall. The base of the ladder is 6 meters from the wall. How high up the wall does the ladder reach?

A. 4 meters B. 8 meters C. 12 meters D. 16 meters

20. According to the Triangle Inequality Theorem, which of the following sets of side lengths can form a triangle?

A. 3 cm, 4 cm, 8 cm C. 7 cm, 8 cm, 14 cm

B. 5 cm, 6 cm, 11 cm D. 2 cm, 2 cm, 5 cm

21. An agriculture student is analyzing a linear model of crop growth represented by the equation $3x + y = 12$, where x represents weeks and y represents height. What is the slope (m) of this equation, which indicates the rate of growth?

A. -3 B. 3 C. -1/3 D. 1/3

22. A system of linear equations is graphed, and the two lines intersect at exactly one point. What does this indicate?

A. The system has exactly one solution. C. The system has no solution.

B. The system has infinite solutions. D. The lines are parallel.

23. You have 500 pesos to buy burgers (50 pesos each) and fries (30 pesos each). Let x be the number of burgers and y be the number of fries. Which inequality represents your budget constraint?

A. $50x + 30y \leq 500$ C. $50x - 30y < 500$

B. $50x + 30y \geq 500$ D. $30x + 50y = 500$

24. A welding student graphs the maximum safe heat levels for a project using the boundary line for the inequality $y > 2x – 3$. Should this boundary line be drawn as a solid or dashed line, and which side should be shaded?

A. A solid line, shaded below. C. A dashed line, shaded below.

B. A solid line, shaded above. D. A dashed line, shaded above.

25. If two linear equations have the exact same slope but different y-intercepts, their graphs will be:

A. Intersecting lines B. Perpendicular lines C. Parallel lines D. The same line

26. A quality control student in a manufacturing class randomly tests a batch of 6 identical machine parts labeled 1 through 6. What is the theoretical probability that they will select a part with a label number greater than 4?

A. 1/6 B. 2/6 (or 1/3) C. 3/6 (or 1/2) D. 4/6 (or 2/3)

27. A weather forecaster says there is a 30% chance of rain tomorrow. What is the probability that it will NOT rain?

A. 30% B. 50% C. 70% D. 100%

28. If you flip a coin 50 times and it lands on heads 20 times, what is the experimental probability of getting heads?

A. ½ B. 2/5 C. 3/5 D. 1

29. Based on the Fundamental Counting Principle, if you have 4 shirts, 3 pants, and 2 pairs of shoes, how many unique outfits can you form?

A. 9 B. 12 C. 14 D. 24

30. What is the main difference between experimental and theoretical probability?

A. Theoretical probability is based on what actually happens in a trial; experimental is what is mathematically expected.

B. Experimental probability is based on actual trials; theoretical probability is based on mathematical expectations.

C. Theoretical probability is always higher than experimental probability.

D. They are completely identical in all situations.

Part II: Questionnaire for Contextualized Learning

a. Use of Real-Life Examples						
No.	**Statement**	**Strongly Agree (5)**	**Agree (4)**	**Neutral (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	My mathematics teacher uses real-life examples when explaining lessons.					
2	The word problems we solve are based on real-life situations.					
3	Mathematical concepts are explained using practical or vocational examples.					
4	I understand how Mathematics is used in real jobs or careers.					
5	Some examples in Mathematics are related to our STVEP track (e.g., Cookery, CSS, Electronics, Garments).					
b. Relevance of Lessons to Daily Activities						
No.	**Statement**	**Strongly Agree (5)**	**Agree (4)**	**Neutral (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	Mathematics lessons are useful in my daily life.					
2	Mathematics lessons help me understand real-world problems.					
3	I can connect Mathematics topics to situations outside the classroom.					
4	I see the importance of Mathematics in real-life situations.					

5	I believe Mathematics will be helpful for my future career.					

c. Student Engagement

No.	Statement	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
1	I participate more when Mathematics lessons include real-life examples.					
2	I understand mathematical concepts better when the lessons are applied to real-life situations.					
3	I feel motivated to solve mathematics problems that are related to my STVEP track.					
4	I enjoy working with my classmates during Mathematics activities involving real-life situations.					
5	I focus better when Mathematics lessons involve practical applications.					

d. Teacher Use of Contextualized Teaching Strategies

No.	Statement	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
1	My teacher connects Mathematics lessons to practical, real-life problems.					
2	My teacher provides opportunities for hands-on learning.					
3	My teacher encourages collaborative problem-solving activities.					
4	My teacher uses examples that relate Mathematics to vocational skills.					
5	My teacher integrates real-life situations in quizzes and exercises.					

Appendix E

Table of Specifications (TOS) for Mathematical Comprehension Test

Bloom's Taxonomy Level	Description of Cognitive Skill	No. of Items	Item Numbers	Percentage
Remembering	Recall of facts, formulas, and basic definitions	0	-	0%
Understanding	Interpreting concepts and explaining ideas	4	4, 22, 25, 30	13.3%

Applying	Using procedures, formulas, and solving routine problems	19	1, 3, 6, 7, 8, 9, 11, 12, 13, 16, 17, 18, 19, 21, 23, 26, 27, 28, 29	63.3%
Analyzing	Breaking down information, identifying relationships, interpreting patterns	5	2, 5, 10, 20, 24	16.7%
Evaluating	Making judgments, comparisons, and decisions based on criteria	2	14, 15	6.7%
Creating	Producing new or original work	0	-	0%
Total		30		100%

Notes:

• Total number of test items: 30 (multiple-choice)

• Scoring: 1 point per correct answer; 0 for incorrect

• Aligned with Mathematics 8 Matatag Curriculum Guide

Appendix F.1

Validity Test Results

RESEARCH INSTRUMENT VALIDATION RESULT

Using the criteria developed for evaluating the content validity of a researcher-made instrument, as set forth by C.H. Lawshe (1975), five evaluators assessed the questionnaire on "_____"

For a panel of 5 or 6 experts, an item must achieve a minimum CVR value of **0.99** to be considered significantly valid at the $\alpha = 0.05$ level. Since $N = 5$, this effectively means all five panelists must agree that an item is "essential" for it to meet Lawshe's original threshold for inclusion.

MATHEMATICAL COMPREHENSION

$$\text{Mean CVR} = \frac{\text{TTot\_ number of essential items}}{number\ of\ items}$$

Total number of essential items = 30 Number of Items = 30

Mean CVR $= \frac{30}{30} = 1$ **Strong Content Validity (all items are essential)**

CONTEXTUALIZED LEARNING

$$\text{Mean CVR} = \frac{\text{Total number of essential items}}{number\ of\ items}$$

Total number of essential items = 20 Number of Items = 20

Mean CVR $= \frac{20}{20} = 1$ **Strong Content Validity (all items are essential)**

MAURINE SHERLYN D. LAWAS, LPT
Research and Creative Works Office Staff
La Carlota City College

Appendix F.2

Reliability Test Results

Reliability Results

Mathematical Comprehension

Correlations

		MATHEMATICAL COMPREHENSION PRE-TEST	MATHEMATICAL COMPREHENSION POST-TEST
MATHEMATICAL COMPREHENSION PRE-TEST	Pearson Correlation	1	.429*
	Sig. (2-tailed)		.018
	N	30	30
MATHEMATICAL COMPREHENSION POST-TEST	Pearson Correlation	.429*	1
	Sig. (2-tailed)	.018	
	N	30	30

*. Correlation is significant at the 0.05 level (2-tailed).

Contextualized Learning

Reliability Statistics

Cronbach's Alpha	N of Items
.915	20

Item Statistics

	Mean	Std. Deviation	N
Item 1	4.77	.504	30
Item 2	4.30	.651	30
Item 3	4.07	.785	30
Item 4	4.47	.571	30
Item 5	4.40	.498	30
Item 1	4.63	.556	30
Item 2	4.27	.640	30
Item 3	3.93	.740	30
Item 4	4.13	.507	30
Item 5	4.80	.407	30
Item 1	3.90	.923	30
Item 2	3.93	.785	30
Item 3	4.27	.691	30
Item 4	4.63	.490	30
Item 5	4.07	.785	30
Item 1	4.50	.777	30
Item 2	4.63	.615	30
Item 3	4.43	.728	30
Item 4	4.43	.774	30
Item 5	4.50	.682	30

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	82.30	62.976	.630	.910
Item 2	82.77	60.461	.729	.907
Item 3	83.00	59.034	.715	.907
Item 4	82.60	61.559	.712	.908
Item 5	82.67	64.782	.404	.914
Item 1	82.43	68.254	-.032	.922
Item 2	82.80	65.890	.190	.919
Item 3	83.13	60.671	.612	.910
Item 4	82.93	63.651	.539	.912
Item 5	82.27	66.064	.309	.915
Item 1	83.17	57.178	.734	.906
Item 2	83.13	60.740	.565	.911
Item 3	82.80	60.028	.725	.907
Item 4	82.43	64.806	.409	.914
Item 5	83.00	60.690	.570	.911
Item 1	82.57	61.771	.483	.913
Item 2	82.43	61.289	.686	.908
Item 3	82.63	59.344	.749	.906
Item 4	82.63	59.206	.711	.907
Item 5	82.57	59.426	.797	.905

Appendix F.3

Raw Data of Grade 8 STVEP Students

RESPONDENT	SEX	STVEP TRACK	PARENTS' EDUCATIONAL ATTAINMENT	AVE. FAMILY MONTHLY INCOME	RAW GRADES	ACADEMIC ACHIEVEMENT
1	1	3	4	2	94	1
2	1	3	4	3	92	1
3	1	3	2	2	86	2
4	1	3	3	4	91	1
5	1	3	4	4	93	1
6	2	3	4	3	97	1
7	1	3	3	3	95	1
8	2	4	2	1	94	1
9	2	4	3	1	95	1
10	2	4	3	2	95	1
11	2	4	2	1	96	1
12	2	4	2	2	94	1
13	2	4	3	2	87	2
14	1	4	4	2	90	1
15	2	4	3	3	97	1
16	2	4	4	2	92	1
17	2	1	3	1	94	1
18	2	1	2	2	96	1
19	1	1	3	3	92	1
20	2	1	4	4	93	1
21	2	1	3	1	91	1
22	1	1	4	4	88	2
23	1	1	3	2	90	1
24	2	1	3	2	86	2
25	1	1	3	2	91	1
26	2	1	3	1	90	1
27	1	1	3	2	86	2
28	2	1	3	4	94	1
29	1	1	4	3	92	1
30	2	1	4	3	87	2
31	2	1	3	2	97	1
32	2	1	3	1	90	1
33	1	1	3	2	89	2
34	1	1	3	1	95	1
35	2	1	3	3	92	1

RESPONDENT	SEX	STVEP TRACK	PARENTS' EDUCATIONAL ATTAINMENT	AVE. FAMILY MONTHLY INCOME	RAW GRADES	ACADEMIC ACHIEVEMENT
36	2	1	3	3	94	1
37	2	1	3	1	85	2
38	1	1	3	4	93	1
39	1	1	2	3	90	1
40	1	1	3	3	84	3
41	2	1	4	2	95	1
42	2	1	2	1	94	1
43	2	1	3	4	95	1
44	2	1	4	4	94	1
45	2	1	3	2	91	1
46	2	1	3	3	91	1
47	2	1	3	2	96	1
48	2	1	3	1	86	2
49	2	1	3	3	97	1
50	2	1	3	2	93	1
51	1	1	3	1	95	1
52	1	1	3	3	92	1
53	2	1	2	2	90	1
54	2	1	4	2	92	1
55	2	1	3	1	97	1
56	2	1	3	3	87	2
57	2	1	3	2	86	2
58	2	1	3	2	95	1
59	1	1	3	1	95	1
60	1	1	3	4	92	1
61	2	1	3	3	93	1
62	2	1	3	3	96	1
63	2	1	3	3	89	2
64	2	1	3	3	88	2
65	1	1	4	3	95	1
66	1	1	3	2	90	1
67	2	1	3	4	90	1
68	2	1	3	1	90	1
69	1	1	3	3	94	1
70	2	1	3	2	89	2

RESPONDENT	SEX	STVEP TRACK	PARENTS' EDUCATIONAL ATTAINMENT	AVE. FAMILY MONTHLY INCOME	RAW GRADES	ACADEMIC ACHIEVEMENT
71	2	1	3	2	95	1
72	2	1	3	3	93	1
73	1	1	3	3	94	1
74	1	1	4	4	94	1
75	2	1	2	1	94	1
76	1	1	3	4	93	1
77	2	1	3	3	93	1
78	2	1	3	3	96	1
79	2	1	2	2	92	1
80	1	1	2	2	96	1
81	2	1	3	3	93	1
82	2	1	2	2	91	1
83	1	1	3	3	93	1
84	1	1	3	3	90	1
85	1	1	3	3	93	1
86	1	1	3	3	91	1
87	1	1	3	3	91	1
88	1	2	3	3	87	2
89	1	2	4	1	87	2
90	2	2	3	1	96	1
91	1	2	3	2	89	2
92	1	2	4	1	85	2
93	2	2	4	3	97	1
94	1	2	3	3	94	2
95	1	2	3	4	83	3
96	2	2	2	1	95	1
97	2	2	2	1	96	1
98	2	2	3	2	94	1
99	1	2	3	3	86	2
100	2	2	3	4	89	2
101	1	2	3	2	89	2
102	2	2	3	1	92	1
103	2	2	3	3	97	1
104	1	2	3	2	94	1
105	1	2	4	3	90	1

RESPONDENT	SEX	STVEP TRACK	PARENTS' EDUCATIONAL ATTAINMENT	AVE. FAMILY MONTHLY INCOME	RAW GRADES	ACADEMIC ACHIEVEMENT
106	1	2	3	2	91	1
107	1	2	3	2	90	1
108	1	2	3	2	93	1
109	1	2	3	3	85	2
110	1	2	3	2	88	2
111	2	2	3	3	96	1
112	2	2	2	3	95	1
113	2	2	2	2	89	2
114	1	2	3	2	91	1
115	1	2	3	2	93	1
116	2	2	3	4	94	1
117	1	2	2	4	97	1
118	2	2	3	2	92	1
119	2	2	3	3	93	1
120	2	2	3	3	92	1
121	2	2	3	3	91	1
122	1	2	3	3	86	2
123	1	2	4	4	92	1
124	1	2	3	4	91	1
125	1	2	4	4	90	1
126	2	2	3	3	96	1
127	1	2	3	3	96	1
128	2	2	3	4	93	1
129	2	2	3	3	95	1
130	2	2	3	3	92	1
131	2	2	3	3	94	1
132	2	2	3	2	97	1
133	1	2	3	2	97	1
134	1	2	3	2	96	1
135	2	2	3	2	90	1
136	1	2	3	2	84	3
137	1	2	3	4	95	1

RESPONDENT	MATHEMATICAL COMPREHENSION TEST																												
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	tem 10	tem 11	tem 12	tem 13	tem 14	tem 15	tem 16	tem 17	tem 18	tem 19	tem 20	tem 21	tem 22	tem 23	tem 24	tem 25	tem 26	tem 27	tem 28	tem 29	tem 30
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
2	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0
3	1	1	1	1	0	0	1	0	0	1	0	0	1	1	0	1	0	0	1	0	1	0	0	0	0	1	1	1	1	1
4	1	0	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
7	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1
8	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
9	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
10	1	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1
11	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
12	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
13	1	1	0	0	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
14	1	0	1	0	0	1	1	1	1	1	1	1	0	0	1	1	1	1	0	0	0	1	1	0	0	0	1	1	1	1
15	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
16	1	0	1	0	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1
17	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	0	0	1	1	1
18	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	0	1	0	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1
20	1	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	1
21	1	1	1	1	1	0	1	0	0	0	0	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	1	1	0	1
22	1	1	0	1	0	1	1	0	0	1	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1
23	1	1	0	1	0	0	1	0	0	1	0	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1
24	1	1	0	1	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0
25	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1
26	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
27	1	1	0	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1
28	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1
29	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	0
30	1	1	0	1	1	0	0	1	0	1	0	0	0	0	1	0	0	0	1	1	0	1	0	0	1	0	1	0	1	1
31	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
32	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
33	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
34	1	1	1	1	0	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1
36	1	1	1	1	0	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	1	0	1	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	1	0	1	0	0	1	1	0	1	1	1
38	1	1	1	1	1	1	0	1	0	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1
39	1	1	0	1	0	1	1	0	0	1	0	0	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1
40	1	1	0	0	0	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	1	1	1	0	0	1	1	1	1
41	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
42	1	1	0	1	1	1	1	1	1	0	0	0	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1
43	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
44	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	0	0	0	0	1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
46	1	1	0	1	0	1	1	0	0	1	0	0	0	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1
47	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
48	1	1	0	1	1	1	0	1	0	1	0	1	0	1	0	0	0	0	1	0	0	1	0	0	1	0	1	0	1	1
49	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	1	1	0	0	1	1	1	1	1	1	1	0	1	1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1
51	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0
52	1	1	0	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	1	1	0	1	1	1	0	1	1	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	1	1	1	0	1	1
54	0	1	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0
55	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
56	1	1	0	1	0	1	0	1	0	0	0	1	0	1	0	1	1	0	0	1	1	1	1	1	0	0	1	0	0	1
57	1	1	3	1	0	1	0	1	0	0	0	1	1	1	0	1	1	0	0	0	1	1	0	1	1	0	1	0	0	0
58	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
59	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	0	0	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	1	1	0	1	1	1
61	1	1	0	1	0	1	1	1	0	1	0	0	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
62	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
63	1	1	0	1	1	0	1	1	0	1	0	1	0	0	1	1	0	1	1	0	0	1	0	1	0	1	0	0	0	1
64	1	1	0	1	1	1	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	1
65	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
66	0	0	0	0	1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
67	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1
68	1	1	0	1	1	0	1	0	0	0	0	1	1	1	1	1	1	0	0	0	0	1	0	0	1	1	1	1	0	1
69	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
70	1	1	1	1	0	0	1	0	0	1	0	0	1	0	1	0	1	0	1	0	0	1	0	0	1	1	1	1	0	1

RESPONDENT	MATHEMATICAL COMPREHENSION TEST																														
71	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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73	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1
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102	1	1	1	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1	1
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104	1	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1
105	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1
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107	1	0	1	0	0	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	0	0	1	0	1	0	1	1
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109	1	1	0	0	0	0	1	0	0	1	1	0	1	0	1	0	0	0	1	0	0	1	1	1	0	1	1	1	1	1	1
110	1	1	1	0	0	0	1	0	0	1	1	0	1	0	0	0	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1
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113	0	0	1	0	0	0	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	0	0	1	0	1	0	1	1
114	1	1	1	0	0	0	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	0	1	1
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116	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1	1
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119	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
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121	1	0	1	0	1	1	1	1	0	1	0	1	1	1	1	1	0	1	1	0	1	1	0	0	1	1	0	1	0	1	1
122	1	0	1	0	0	0	1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	1	0	0	1	1	0	1	1	1	1
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127	1	0	0	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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130	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	0	0	1	1	0	1	1
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133	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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137	1	1	1	1	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

RESPONDENT	CONTEXTUALIZED LEARNING																			
	Use of Real-Life Examples					Relevance of Lessons to Daily Activities					Student Engagement					Teachers' Use of Contextualized Learning Strategies				
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5
1	4	3	4	5	5	4	4	4	4	5	4	4	4	4	3	4	4	3	4	4
2	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	5	5	5	5	5
3	4	4	4	5	3	4	5	4	5	5	3	3	4	5	5	4	4	4	4	5
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64	4	5	4	4	4	5	5	4	4	5	4	3	4	4	4	5	5	5	5	5
65	5	5	4	5	5	3	4	3	4	5	4	4	4	5	4	5	4	4	4	4
66	3	4	4	5	5	5	3	3	4	4	3	4	3	4	3	3	4	4	4	3
67	5	4	5	4	5	5	4	4	4	4	4	4	5	4	5	4	5	5	5	4
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69	4	3	3	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4
70	4	4	5	4	4	4	4	3	4	5	4	4	4	4	4	4	4	4	5	4

RESPONDENT	CONTEXTUALIZED LEARNING																			
	Use of Real-Life Examples					Relevance of Lessons to Daily Activities					Student Engagement					Teachers' Use of Contextualized Learning Strategies				
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5	Item 1	Item 2	Item 3	Item 4	Item 5
71	5	4	4	4	4	4	5	3	4	4	4	4	4	3	4	5	4	4	4	4
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107	5	4	4	5	5	4	4	4	4	5	3	3	4	5	3	5	5	5	5	5
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136	5	5	4	4	4	5	5	5	4	5	5	4	5	5	4	5	5	4	4	5
137	5	4	4	5	4	5	5	5	5	5	5	4	4	5	4	4	5	4	4	4

Appendix F.4

Result of Normality Test

NORMALITY

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Score_Mathematical Comprehension Test	.124	137	<.001	.945	137	<.001
Overall Mean_Contextualized Learning	.059	137	.200*	.987	137	.233
Academic Achievment	.114	137	<.001	.950	137	<.001

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix F.5

Result of Statistical Data Analysis

SOP 1

Frequency Table

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	61	44.53	44.53	44.53
	Female	76	55.47	55.47	100.00
	Total	137	100.00	100.00	

STVEP Track

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cookery	71	51.82	51.82	51.82
	CSS	50	36.50	36.50	88.32
	Electronics	7	5.11	5.11	93.43
	Garments	9	6.57	6.57	100.00
	Total	137	100.00	100.00	

Parents' Educational Attainment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	17	12.41	12.41	12.41
	College	99	72.26	72.26	84.67
	Postgraduate	21	15.33	15.33	100.00
	Total	137	100.00	100.00	

Average Family Monthly Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below ₱10,000	22	16.06	16.06	16.06
	₱10,001–₱20,000	45	32.85	32.85	48.91
	₱20,001–₱30,000	49	35.77	35.77	84.67

SOP 2

Descriptive Statistics

	N	Mean	Std. Deviation
Score_Mathematical Comprehension Test	137	22.23	4.37
Valid N (listwise)	137		

Means

Report

Score_Mathematical Comprehension Test

Level of Mathematical Comprehension Test	N	Mean	Std. Deviation
Very Good	53	26.60	1.21
Good	53	21.55	1.81
Fair	30	16.03	1.43
Poor	1	12.00	.
Total	137	22.23	4.37

SOP 3

Descriptive Statistics

	N	Mean	Std. Deviation
Mean_Use of Real-Life Examples	**137**	**4.27**	**.42**
1. My mathematics teacher uses real-life examples when explaining lessons.	137	4.50	.60
2. The word problems we solve are based on real-life situations.	137	4.04	.63
Mathematical concepts are explained using practical or vocational examples.	137	4.23	.62
4. I understand how Mathematics is used in real jobs or careers.	137	4.28	.70
5. Some examples in Math are related to our STVEP track (e.g., Cookery, ICT, Electronics, Garments).	137	4.31	.64
Mean_Relevance of Lessons to Daily Activities	**137**	**4.25**	**.50**

Descriptive Statistics

	N	Mean	Std. Deviation
1. Math lessons are useful in my daily life.	137	4.41	.71
2. Mathematics lessons help me understand real-world problems.	137	4.26	.67
3. I can connect Math topics to situations outside the classroom.	137	3.88	.75
4. I see the importance of Math in real-life situations.	137	4.18	.67
5. I believe Mathematics will be helpful for my future career.	137	4.52	.64
Mean_Student Engagement	**137**	**3.98**	**.52**

1. I participate more when Math lessons include real-life examples.	137	3.91	.72
2. I understand difficult mathematical concepts better when the lessons are applied to real-life situations.	137	3.86	.74
3. I feel motivated to solve problems connected to my STVEP specialization.	137	3.99	.73
4. I work well with my classmates during real life Math activities.	137	4.17	.71
5. I focus better when Math lessons involve practical applications.	137	3.96	.69
Mean_Teachers' Use of Contextualized Learning Strategies	**137**	**4.32**	**.51**

1. My teacher connects Math lessons to practical, real-life problems.	137	4.31	.65
2. My teacher provides opportunities for hands-on learning.	137	4.34	.66
3. My teacher encourages collaborative problem-solving activities.	137	4.30	.66

4. My teacher uses examples that relate Math to vocational skills.	137	4.36	.60
5. My teacher integrates real-life situations in quizzes and exercises.	137	4.27	.66
Overall Mean_Contextualized Learning	**137**	**4.20**	**.38**
Valid N (listwise)	137		

SOP 4

Descriptive Statistics

	N	Mean	Std. Deviation
Academic Achievment	137	92.04	3.40
Valid N (listwise)	137		

Means

Report

Academic Achievment

Level of Academic Achievment	N	Mean	Std. Deviation
Outstanding	108	93.39	2.20
Very Satisfactory	26	87.42	1.94
Satisfactory	3	83.67	.58
Total	137	92.04	3.40

SOP 5

Correlations

			Score_Mathematical Comprehension Test	Academic Achievment
Spearman's rho	Mathematical Comprehension	Correlation Coefficient	1.000	.882**
		Sig. (2-tailed)	.	<.001
		N	137	137
	Academic Achievment	Correlation Coefficient	.882**	1.000
		Sig. (2-tailed)	<.001	.
		N	137	137

**. Correlation is significant at the 0.01 level (2-tailed).

SOP 6

Correlations

			Overall Mean_Contextualized Learning	Academic Achievment
Spearman's rho	Contextualized Learning	Correlation Coefficient	1.000	-.032
		Sig. (2-tailed)	.	.710
		N	137	137
	Academic Achievment	Correlation Coefficient	-.032	1.000
		Sig. (2-tailed)	.710	.
		N	137	137

CURRICULUM VITAE

Personal Data

Name: ABIGAIL M. ALFARO

Cellphone No.: 09773760588

Email Add.: abigail.alfaro0130@gmail.com

Address: CBC Paet, Brgy. Batuan,

La Carlota City, Negros Occidental

Birthday: August 12, 1993

Core Competencies

Computer literate

Logical-Mathematical Skills

Educational Background

Graduate Studies Master of Arts in Education

Major in Mathematics

La Carlota City College Graduate School

La Carlota City

2026

Tertiary Bachelor in Secondary Education Major in

Mathematics

La Carlota City College

La Carlota City, Negros Occidental

2014

Secondary Doña Hortencia Salas Benedicto National

High School

La Carlota City, Negros Occidental

2010

8th Honorable Mention

Elementary La Carlota North Elementary School

La Carlota City, Negros Occidental

2006

Professional Experiences

Teacher II

Doña Hortencia Salas Benedicto National High School

La Carlota City, Negros Occidental

2023 to present

Teacher I

Doña Hortencia Salas Benedicto National High School

La Carlota City, Negros Occidental

2016 to 2023

Job Order Employee

General Services Office

La Carlota City, Negros Occidental

2015-2016

Customer Service Representative

Convergys – Bacolod

Lacson St., Brgy. Mandalagan, Bacolod City

2014-2015

Examination Passed

Licensure Examination for Professional Teachers

Bacolod City, Negros Occidental

August 17, 2014

Seminars and Workshop Attended

1. Supercharging Instruction for National Advancement with Google (SINAG)
February 26-27, 2026

Division of La Carlota City

La Carlota City

2. Innovative Strategies for Developing Multidisciplinary Learning Resources
August 27-29, 2025

Division of La Carlota City

La Carlota City

3. Revised K to 10 Curriculum Mathematics 8 School-Based Teacher Training

July 29-31, 2025

Doña Hortencia Salas Benedicto National High School

La Carlota City

4. School-Based IN-SERVICE TRAINING in Empowering Educators: Sustainability in Challenges, a Focus on Differentiation, DRRM, Mental Health and Legal Responsibilities
November 25-29, 2024

Doña Hortencia Salas Benedicto National High School

La Carlota City

5. School-Based IN-SERVICE-TRAINING in DHSBNHS Trancedence2024: The Higher Order Thinking Skills (HOTS)
January 24-30, 2024

Doña Hortencia Salas Benedicto National High School

La Carlota City

6. National Learning Camp Review (PIR) and Support Activities for NLC Implementers

October 27-28, 2023

Division of La Carlota City

La Carlota City

7. School-Based IN-SERVICE TRAINING in Designing 21st Century Assessment in all Learning Areas

August 9-11, 2023

Doña Hortencia Salas Benedicto National High School

La Carlota City

8. Capability Building in Implementation of National Learning Camp for Grades 7 & 8 English, Science and Mathematics Teachers

July 21-23, 2023

Division of La Carlota City

La Carlota City

9. Scaling – Up And Retooling In Mathematics, Languages And Science (Primals Plus)

April 3, 5, 11, and 13, 2023

Doña Hortencia Salas Benedicto National High School

La Carlota City

10. Virtual In-Service Training for Teachers

February 16-20, 2023

Doña Hortencia Salas Benedicto National High School

La Carlota City

11. Virtual In-Service Training for Teachers

August 30 – September 3, 2021

Office of the Undersecretary for Administration

12. "SCHOOL-BASED INSET 2021: Strengthening Teachers' Dimension, Adaptation & Accommodation during the Pandemic"

March 15, 2021

Doña Hortencia Salas Benedicto National High School

La Carlota City

13. VIRTUAL SCHOOL-LED INSET 2021: Issues, Concern, and Challenges of LDM, Assessment and Grading, and Update on the Utilization of LAS

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume X Issue VII July 2026

February 8-13, 2021

Doña Hortencia Salas Benedicto National High School

La Carlota City