ISSN No:-2456-2165

Attitudes And Performance In Trigonometry Using Blended Learning Among College Students In A State University Amidst Covid-19 Pandemic

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ISSN No:-2456-2165

ABSTRACT

Most schools implement blended learning modality to deliver quality education amidst the COVID-19 pandemic. This study determined the attitudes and performance in Trigonometry using blended learning among college students in Biliran Province State University, school year 2021-2022 amidst COVID-19 pandemic as basis for an action plan. It employed a descriptive-correlational research design to gather data regarding the attitudes and performance of the 34 freshman college Education students who are enrolled in Trigonometry. They responded to two adopted research questionnaires the Fennema-Sherman Attitudine Scale and the Trigonometry Proficiency Test. The collected data were treated using frequency, simple percentage, rank, weighted mean, standard deviation, Chi-square test of independence, and ANOVA. The findings revealed that students are less proficient in Trigonometry test using blended learning approach despite of their positive attitudes in Trigonometry. Also, the study shows that age and gender of the students do not have relationships with their attitudes and performance in Trigonometry. The study concluded that students need to improve their learning in the subject for these are prerequisites in higher mathematics.The researcher recommends that the action plan should be implemented, monitored and evaluated to improve the performance of students in Trigonometry.

Keywords: *Teaching Mathematics, Trigonometry, performance, attitudes, descriptive method, Philippines.*

ISSN No:-2456-2165

CHAPTER 1

THE PROBLEM AND ITS SCOPE

A. INTRODUCTION

a) Rationale of the Study

The COVID-19 pandemic has shifted the educational landscape from in-person instruction to blended learning. The preceding health protocols limit movement and disallow students to attend school physically. Instead of studying in the classroom, students are left at home to digest all the information being taught online alone without teachers being substantially present as mentors. For this reason, most students have suffered from psychological, social, financial, and cognitive issues.

From 2020, cities and municipalities will move forward with the new normal of digitizing information and teaching styles to accommodate social distancing and health protocols. Students were assigned modules and online classes to amend the mandated learning form, blended learning, during COVID-19. The modules consist of different subjects the students are enrolled in, while the online classes are used as partial participation virtually to ensure that the module is followed through. More or less, the involvement of the students requires their full attention because, more often than not, they are left to study the lessons independently after the online classes. Despite the efforts of the teachers to fill the gaps, the students are still having a hard time coping with the learning method introduced by government protocols.

Without attending physical school, students were still able to learn from their classes through online mentoring and modular learning. E-classes in the new normal are held by teachers and staff in compliance with quarantine protocols by the Inter-Agency Task Force (IATF) to continue school far from the actual place of teaching and studying. In essence, this is called blended learning, which is combined modular instruction and online learning. The use of self-learning modules in teaching is part of the modular approach. A module is a collection of educational activities structured around a well-defined subject. It includes elements such as symmetrical narration, classification objectives, enriching cognitive actions, and international criterion-referenced measurements for evaluation. The purposes of a module are clearly articulated, preferably in experiential form. Further, online learning is a type of education in which students learn from the comfort of their homes via their personal computers.

In the teaching and learning of Trigonometry, students encounter problems that are difficult to solve in face-to-face learning. They may lack interest, motivation, and a positive attitude, and some are not meant to specialize in it, so they pay little or no attention to understanding Trigonometry concepts. As a result, a blended learning approach can boost students' interest and positivity. Blended learning encourages active learning and interaction between students and the learning environment's mediator. Also, using blended learning helps diversify the instructional delivery in Trigonometry.

Attitudes toward learning Trigonometry are essential to consider for college students. Their negative attitudes toward Trigonometry may affect their performance in the subject using blended learning.

As observed by the researcher as a teacher in Trigonometry, learning the subject using blended learning seems difficult for students. Learning Trigonometry was hinted at as inefficient because of students' attitudes toward Trigonometry. Cognitive issues of students make the matter worse because of vague learning content, overloaded lessons, and a poor learning environment. The overall attitude of students was regressing their interest because of too many nuisances accompanied by the learning modality. This includes unpreparedness and the incapacity to understand the lesson.

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This study aims to determine the attitudes and performance of students in Trigonometry lessons using blended learning at Biliran Province State University. It has been almost two years since the blended learning approach was implemented. Thus, the researcher finds it essential to study students' performance in Trigonometry.

b) Theoretical Background

This research is based on Kolb's Experiential Learning Theory (1984), Social Learning Theory by Albert Bandura (1977), and Constructivism Theory by Jerome Bruner (1960). Furthermore, this study is supported by the following legal bases: R.A. 9155 [Governance of Basic Education Act of 2001], DepEd Order No. 21, series 2019 [Policy Guidelines on the K to 12 Basic Education Program], and DepEd Order No. 1, series 2021 [Policy on the Evaluation of SLMs for Quarter 3 and 4 for Quarters 3 and 4, the School Year 2020-2021].

David Kolb's Theory of Experiential Learning is one of the humanistic and constructivist approaches to education that emphasizes natural learning as it emphasizes learning through reflection on doing (Gadola& Chindamo, 2019). Kolb proposed that experience was critical in developing knowledge construction, as learning occurs through discovery and active participation (Morris, 2020; Ng et al., 2019).

Kolb's Experiential Learning Theory is divided into two parts. The first is that learning occurs in four stages. Kolb believed that, in an ideal world, learners would progress through the process stages due to their transformation and experiences into knowledge (McLeod, 2017). The second section of Kolb's Theory concentrated on learning styles, or cognitive processes for acquiring knowledge through a learning cycle (Yusofet al., 2020). Kolb believed that individuals could learn effectively and better by reflecting upon previous experiences and creating an improved and better experience (Idris et al., 2020).

Completing all stages of the cycle allows the transformation of experience into knowledge. Kolb's entire theory is based on the process by which knowledge is created through experience transformation (Pamungkas et al., 2019). Given Kob's cycle, students cannot learn by simply watching or reading something but through engagement (Widiastuti&Budiyanto, 2018). Students should ideally be able to progress through each stage.

ISSN No:-2456-2165

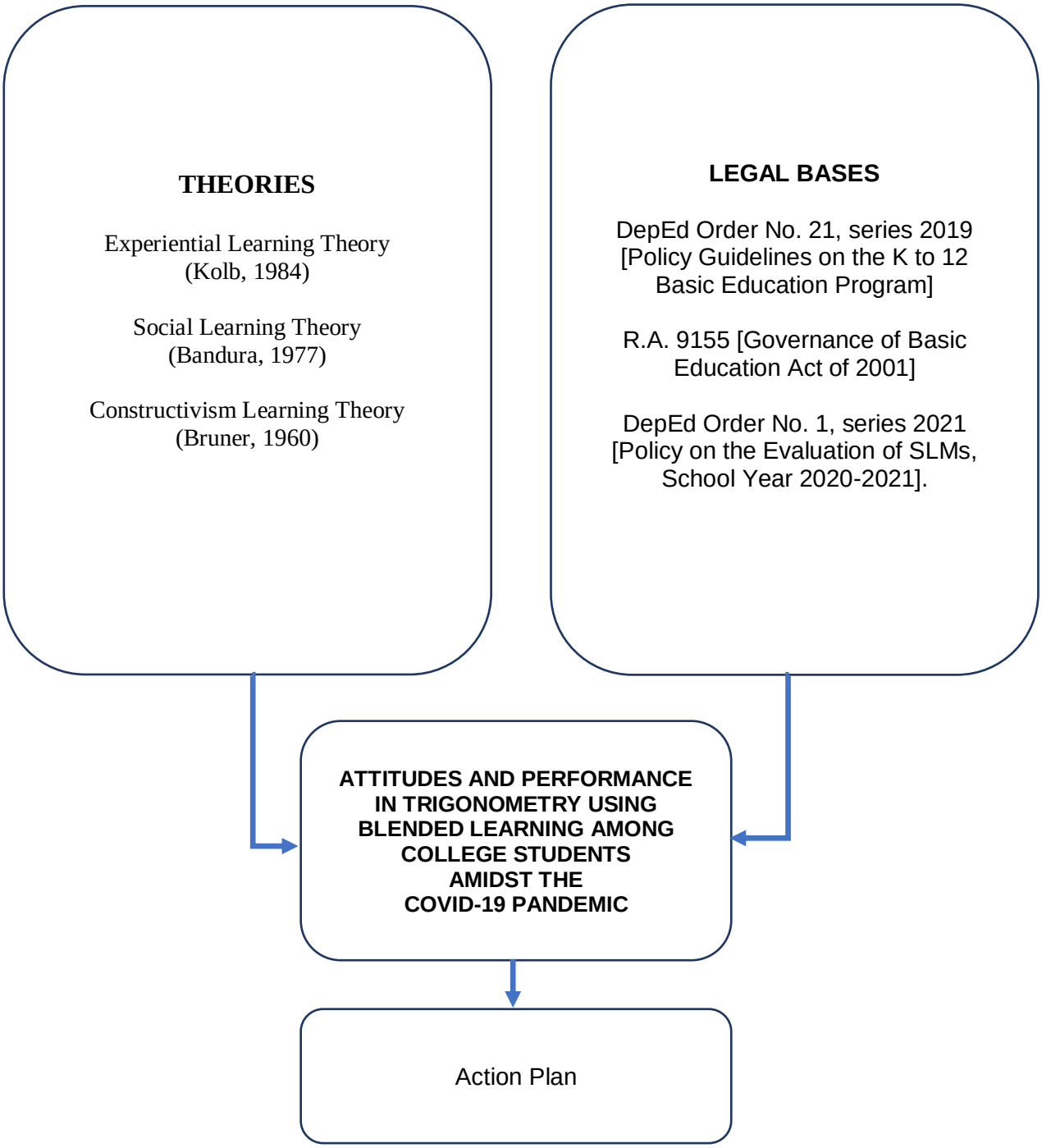

Fig. 1: Conceptual Framework of the Study

Kolb's theory revolves around experiences, which he saw as a process by which something must be changed or transformed (Nhung et al., 2022). Memorization or recollection of ideas taught is not the same as learning because no value is added to the learner. To be defined as learning, something must be generated from experience, according to Kolb's model (Chiu 2019).

Albert Bandura's Social Learning Theory emphasizes the relevance of observing, modeling, and imitating behaviors, attitudes, and emotional reactions (Rumjaun&Narod, 2020). Social learning theory considers the experiences we get from others or from the environment through observation (Yilmaz et al., 2019). Albert Bandura (1977) agrees with the behaviorist learning theories of classical conditioning and operant conditioning in social learning theory.

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The three theories are connected to my study because learning Trigonometry occurs naturally because they understand the lessons. After all, the function of their minds allows them to. Further, they progress throughout the studying cycle due to the tendency to answer and comprehend the lesson step-by-step. Lastly, they can transform this experience into a learning mechanism because they interact with their teachers and classmates.

Learning is a relatively lasting change in behavior resulting from experience (Cherry 2022). As most parents are probably very much aware, observation can play a critical role in determining how and what children learn. As the saying goes, kids are like sponges, soaking up their daily experiences. Albert Bandura posited a social learning theory in which observation and modeling are central to the process.

Bandura's theory moves beyond behavioral theories, which suggest that all behaviors are learned through conditioning, and cognitive theories, which consider psychological influences such as attention and memory (Bandura, 2021).

Constructivist Theory by Jerome Bruner in 1960, where students actively build their knowledge based on relevant experiences, so the new knowledge comes as the old ones are the foundation. Students can discover and explore learning; prior knowledge is essential to learning (Heo et al., 2018; Kang et al., 2017). Constructivism has been a compelling model for explaining how knowledge is produced globally and how students learn (Shah, 2019). In MDL, understanding the module starts with the students.

Following its legal mandate, DepEd has promulgated flexible learning and materials issuances, specifically, DepEd Order No 21, series 2019, or the Policy Guidelines on the K-to-12 Basic Education Program. It sets forth flexible learning options [FLOs], including alternative delivery modes and related learning resources responsive to learners' needs, context, circumstances, and diversity. These policy guidelines aim to establish the standards and specifications for providing learning resources in implementing the BE-LCP. The learning resources serve as learning toolkits for learners, containing procedures, instructions, and other details to aid the learning process under the supervision of responsible adults and teachers who provide continuous monitoring and guidance.

Republic Act No. 9155, also known as the Governance of Basic Education Act of 2001, stipulatedthe governance of basic education that must start at the national level. It is a mission to give quality basic education to all Filipinos, making education accessible to all. In Section 6, DepEd has the authority, accountability, and responsibility to ensure access to, promote equity in, and improve the quality of basic education, which must continue even during COVID-19. This is the basis of creating the Basic Education Learning Continuity Plan [BE-LCP].

To ensure the quality of SLMs being used in the MDL modality, DepEd issued guidelines on evaluating SLMs, particularly those used by students in the coming grading periods. DepEd Order No. 1 series 2021 issued policy guidelines on evaluating SLMs for Quarters 3 and 4 for the school year 2020-2021. SLM has become a supplemental means of learning in new normal education (Bacomo et al., 2022). The primary learning resource for MDL is the present educational setup.

According to Ackbarov and Aydogan (2018), blended learning serves students' educational needs by improving student satisfaction, increasing choice and ease, acquiring and improving language skills, and improving critical thinking.

According to them, pupils are satisfied with blended learning and appreciate this innovative form of teaching. Students with a positive attitude toward learning and are highly motivated to learn also have a positive attitude toward online learning in blended courses. In general, using the blended learning methodology to teach Trigonometry extensively influences pupils' perceptions of the subject.

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A printed self-learning module is essential to aid distance learning in continuing the students' basic education (Tupas & Linas-Laguda, 2020; Baruah, 2018;). As a continued learning modality in the middle of the COVID-19 crisis, the result of the study will be beneficial to the learners to rigorously implement self-discipline in time management and set daily priorities to accomplish every single task stipulated in the self-learning module. Moreover, the learners will also learn to develop strong self-reliance and a positive attitude toward independent learning (Mashitoh, et al., 2021).

The rapid spread of COVID-19 has sparked worldwide concern. The government announced the closure of educational institutions as a precautionary measure to combat this outbreak (Libasin et al., 2021). Universities have the mission of promoting social, cultural, and economic development. Adopting flexible learning pathways strategies has been essential to facilitate students' access and creating an inclusive learning environment (Rey-Naizaque, 2021).

According to the Aksan (2021) study, students' perceptions agreed on using the modular distance learning approach (MDLA). It means that the students had favorable views of MDLA in mathematics. The study also found that students who agreed to use the modular distance learning approach (MDLA) in math faced a few difficulties. It also positively affected students' performance; students performed very satisfactorily in Mathematics, which means they had a good quality performance. However, when the students were grouped by gender and age, there was no significant difference in their perceptions, indicating that they all had the same perceptions.

The study of Fadillah et al. (2020) concluded that students' average level of mathematical disposition was classified as moderate. Only the monitor and evaluate indicators are classified as a high category if seen from the indicators. Indicators of persistence and perseverance, especially when lecturers present interesting contextual problems.

COVID-19 forced universities to improvise and adopt online learning and teaching rapidly. Minor changes to teaching design and delivery are required for effective teaching continuously. This is an ambidextrous approach to education in which teachers concentrate on the immediate co-creation of student experiences and identify cues used to adjust how they interact with a student cohort throughout a module. Module evaluation evolves into a continuous process in which changes are made in real-time, and subsequent student-learning encounters are observed (Thomas & Bryson, 2021).

Wang et al. (2021) examined the relationships between the role of the instructor and university students’ learning outcomes in cloud-based classrooms during the COVID-19 pandemic. The study revealed that the students' perceived learning outcomes and satisfaction were positively related to instructor innovation and negatively related to instructor performance. Instructional support was positively associated with the students' perceived learning outcomes but not directly related to their learning satisfaction. The student's academic self-efficacy mediated the influence of instructional support and instructor innovation on their perceived learning outcomes and satisfaction. The results contribute to instructors' role in facilitating students' learning outcomes in higher education and suggest ways to improve the learning environment and outcomes, especially in cloud-based virtual classrooms.

The COVID-19 pandemic has affected many countries, causing school closures and a shift from face-to-face and online learning methods. Yohannes et al. (2021) discovered that several factors, including students, teachers, the school, curriculum, and parents, contributed to teachers' difficulties in implementing online learning. Students and teachers posed significant challenges. As a result, it was critical to consider suggestions and efforts to overcome teachers' challenges in implementing online learning. Coordination and collaboration among the government, schools, teachers, students, and parents are critical to the success of online learning.

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Blended learning incorporates online learning experiences and assists students in meaningful learning through flexible online information and communication technologies, reduced overcrowding in the classroom, and planned teaching and learning experiences. As a result, blended learning benefits school, university, and professional training. An extensive set of online and e-learning platforms have been developed recently to be used in blended learning to improve learners' abilities. Using similar tools (Blackboard, CodeTantra, and g suite), the two universities met their requirements and completed all academic activities on time during the pandemic (Kumar et al., 2021).

Blended learning using Desmos alongside platforms such as Zoom can successfully engage students in the learning experience due to its facility to give students and teachers instant feedback about the learning taking place, which is developmental for the students. However, suppose blended learning is to be successfully used in this way. In that case, it is vital that students can study in an appropriate environment and that they have access to the right technology. If blended learning takes place in a classroom setting, this will mean that there needs to be enough computers/laptops/tablets for each student (Lethbridge et al., 2021).

There is a need to develop practical online learning courses or programs that promote critical thinking as a crucial competence of higher education. The study of Varenina et al. (2021) shows a correlation between preferred learning styles and levels of critical thinking, which must be considered when developing the online learning curriculum and lesson plans. The study results will enable students to organize their learning better. Teachers can use this information to optimize the course design.

Recent research has focused on understanding teachers' and students' perceptions of online teaching and learning. The debate over the efficacy of online learning and its future potential continues as the COVID-19 outbreak has made it the best available option under social distancing and quarantine policies. The findings show the similarities and differences between the two groups regarding the factors influencing online teaching and learning satisfaction (Lei & So, 2021).

The COVID-19 pandemic has demonstrated the need for tools and methodologies to support students' autonomous learning and formative assessment practices in distance education contexts, particularly among students from disadvantaged backgrounds.

According to Barana et al. (2021), feedback is more effective than other activities in engaging learners in actions to improve their results, and the effects are more substantial in low socioeconomic contexts.

Students become more confident in learning trigonometry and find valuable trigonometry in their daily lives. Attributes such as performing problem-solving skills and acquiring a positive attitude toward mathematics could help achieve the mathematics curriculum's aspiration and address the poor performance in Trigonometry questions. Therefore, the critical role of the teacher is to explain different concepts to the students and ensure that they understand the material being presented (Manman&Surajo, 2021).

The results demonstrate that willingness, perseverance, and self-confidence in solving mathematical problems are essential to ensure outstanding performance.Ngussa and Mbuti (2017) found that enhancing students' positive attitudes can boost students' performance in mathematics.The student's accomplishment in problem-solving depends on her interest, attitude, and self-confidence. It was discovered that accounting students lack confidence in solving trigonometric problems compared to life and physical science students. Therefore, lecturers need to take reasonable measures to enhance students' self-confidence.

Holmes (2020) examined the relationship between the attitudes and components of the student's attitudes toward math with their mathematics achievements. There were weak relationships between trigonometric achievement and the five elements of perspectives, including the attitude in trigonometry. The contribution of all components of attitude in trigonometry collectively significantly affected (but low) students' achievement in trigonometry. The gift of confidence was significant in the variable trigonometry achievement, but the other components' usefulness, Enjoyment, the subject is perceived as a male domain,

and teacher expectations were not significant in the variable trigonometry achievement. Confidence contributed the greatest to trigonometry achievement in knowledge, comprehension, and application.

Cortez(2020) examined the perception of the students on blended, distance, electronic and virtual learning. The result indicates that the subjects'perception effectivity of online learning and their capability to attend the e-learning sessions is independent of their life style and available e-learning tools despite the result analysis of variance showing that their perceived mathematical capability is significantly different.

Despite teachers' best efforts, students develop trigonometry misconceptions. Furthermore, students' attitudes toward mathematical lesson inquiry improved significantly. Even though enjoyment of mathematics lessons remained high, it did not change. Also, for teachers to create a practical learning experience, they should be aware of and acknowledge students' prior knowledge acquired from academic settings and everyday personal experiences. In order to reduce or eliminate some of the difficulties and encourage knowledge retention in learning Trigonometry, the use of an appropriate method/strategy that involves students' active participation in the learning process is paramount.

With all these, this study intends to see students'attitudes toward Trigonometry and their performance in Trigonometry during the school year 2021-2022 using the bended learning amidst the COVID-19 pandemic.

B. THE PROBLEM

a) Statement of the Problem

This research determined the attitudes and performance in Trigonometry using blended learning among college students in Biliran Province State University during the school year 2021-2022 amidst the COVID-19 pandemic as the basis for an action plan.

Specifically, it sought answers to the following questions:

1. What is the profile of the respondents in terms of:
   1.1 age; and
   1.2gender?
2. What is the level of attitudes of the respondents inTrigonometry in the areas of:
   2.1 Confidence in Learning;
   2.2 Attitudes Towards Success;
   2.3 Mathematics as a Male Domain; and
   2.4 Usefulness?
3. What is the performance of the respondents in Trigonometry?
4. Is there a significant relationship between the profile of the respondents and their:
   4.1 level of attitudes toward Trigonometry; and
   4.2 performance in Trigonometry?
5. When grouped by profile, is there a significant difference in the:
   5.1 level of attitudes toward Trigonometry; and
   5.2 performance in Trigonometry?
6. Based on the findings, what action plan may be drafted?

b) Statement of Null Hypotheses

The following null hypotheses were tested at the 0.05 level of significance.

Ho1: There is no significant relationship between the profile of the respondents and their:
   a. level of attitudes toward Trigonometry; and
   b. performance in Trigonometry.

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Ho2: When grouped by profile, there is no significant difference in the:
a. level of attitudes toward Trigonometry; and
b. performance in Trigonometry.

c) Significance of the Study

The findings of the study would benefit the following stakeholders.

- **Commission on Higher Education.** The results of this study will assist the Commission as a comprehensive guide for them in enhancing the Trigonometry curriculum for teachers to use in delivering quality teaching and learning within the walls of the academe.
- **School Administrators.** The administration can implement school ordinances to augment the detrimental effects of the COVID-19 pandemic on their local institution. This will serve as guiding research that could attest to the memorandum that the school can release.
- **Teachers.** This study will use the flexible learning approach to improve teachers' teaching skills in handling college students who have difficulty teaching Trigonometry. Teachers may review their teaching strategies to adjust their lecture styles better suit their needs.
- **Guidance Counselors.** Psychometricians and psychologists can advise more comprehensive solutions to the students regarding psychosocial, financial, and intellectual factors that degrade their learning capabilities.
- **Students.** The students can understand the root causes of the issues encountered in blended learning. When enlightenment happens, the student can create better study habits incorporated with the action plan against the problems faced in Trigonometry lessons.
- **Parents.** The parents can be supported with the proper methods that can be used to guide their children as students properly. More encouragement, among other forms of moral and physical assistance, augment the difficulties their children feel as students.
- **Researcher.** This study will help him become effective in teaching Trigonometry. Through this study, she can widen her knowledge base on the different topics of Trigonometry on how to improve her teaching.
- **Future Researchers.** The findings and interpretation will reference future research on related topics with different variables not identified.

C. RESEARCH METHODOLOGY

This part presents the methods used in this study, particularly the research design, research environment, research respondents, research instrument, data gathering procedure, statistical treatment of data, and data scoring.

a) Design

This study employed a descriptive correlational study by analyzing quantifiable data gathered using a population survey. A *descriptive correlational research design* is a method in which the researcher is particularly interested in documenting naturally occurring connections between variables. The study's primary goal is to obtain an overview of the current situation and evaluate the relationships among two or more variables.

b) Flow of the Study

The IPO model represents the input, process, and output stages. Inputs are represented by materials and efforts delivered to a system at the start of its lifecycle. *Outputs* are defined as the system's final result.

The profile of the respondents, such as their age and gender, their level of attitudes toward Trigonometry, includes Confidence in Learning, Attitudes Towards Success, Mathematics as a Male Domain, and Usefulness, and their performance in Trigonometry using the blended learning approach are the inputs of the study.

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In the Process approach, the researcher submitted a transmittal letter seeking approval to conduct the study.

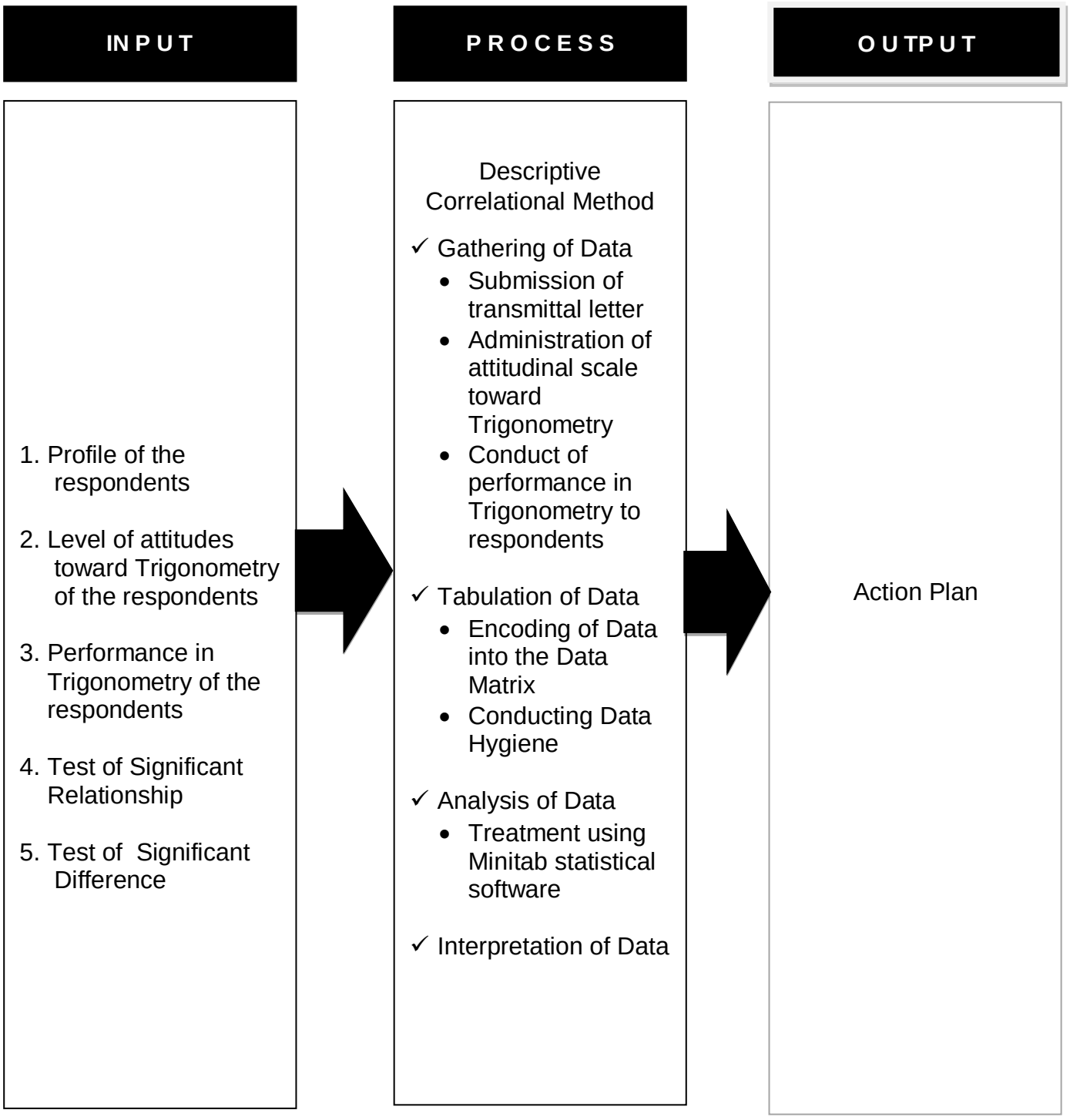

Fig. 2: Flow of the Study

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Once approved, the researcher administered the attitudinal scale toward Trigonometry to the identified respondents of the study. Then, shortly after, she conducted the performance test in Trigonometry. Once completed, the researcher collected the accomplished instrument and encoded the respondents' responses into a Data Matrix file. To make sure that the data are error-free, she hygiene the data. The data were then analyzed using Minitab statistical software and interpreted using the existing literature to strengthen its discussions.

Using a blended learning approach, an action plan was drafted to improve the student's performance in Trigonometry.

c) Environment

This study was conducted at Biliran Province State University (BiPSU), founded in 1965. It is a non-profit public higher education institution located in the small city of Biliran, Eastern Visayas. In Biliran, this institution has a branch campus.

BiPSU is a result of the elevation or conversion of the Naval State University, formerly Naval Institute of Technology, under No. 11170 of the Republic Act. The aforementioned legislative bill results from the academic community's and the Biliranons' collective efforts, unending prayers, and noble dreams.

On October 30, 1945, the late Acting Mayor Pablo Caneja signed Municipal Resolution No. 35, establishing an intermediate public high school in Naval, a municipality in the Philippines' Biliran province.

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Fig. 3: Location Map of the Research Environment

The Naval High School was founded in 1946 and functioned from 1946 to 1947. After decades of operation, late Congressman Marcelino Veloso introduced a bill signed into law on June 19, 1965, transforming Naval High School into a chartered state college under Republic Act 4309.

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The institution was converted for national support under the direction of the first president, Mr. Alfredo C. Joseph. Gerry Boy Espina, a former congressman from Biliran's lone district, proposed that the Naval Institute of Technology (NIT) be turned into a state university under the name Biliran State University.

Biliran Province State University (BiPSU) offers courses and programs leading to officially recognized higher education degrees such as bachelor's, master's, and doctorate degrees in various fields of study. Its mission is to provide academic degrees, higher technological, specialized education, and training in arts and sciences, agriculture, fishing, forestry, maritime education, information & communication technology, engineering, tourism, and other related disciplines. It is also required to perform research, provide institutional capacity, and give contemporary management in its areas of expertise. In the town of Biliran, Biliran runs an extension campus (BiPSU FB, 2022).

d) Respondents

The respondents were 34 freshmen Bachelor in Secondary Education students majoring in Mathematics. Using Blended Learning, they are enrolled in Trigonometry during the second semester of the school year 2021-2022. Since participants are selected depending on their availability, willingness, and eligibility to engage in the study, the researcher applied non-probability convenience sampling.

e) Instruments

This study employed two sets of questionnaires to collect quantitative data from Bachelor of Secondary Education students enrolled in Trigonometry.

The first instrument contains two parts. Part 1 gathers the respondents' profiles, including their age and gender. Part 2 gathers the respondents' attitudes in Trigonometry using a standardized instrument such as the Fennema-Sherman Mathematics Attitude Scales. This part has four areas: a) Confidence in Learning, b) Attitudes Towards Success, c) Mathematics as a Male Domain and d) Usefulness. In this section, the respondents answered using the 4-Likert scale: 4 points for Strongly Agree, 3 points for Agree, 2 points for Disagree, and 1 point for Strongly Disagree. The respondents were advised to put a checkmark corresponding to their feelings about the items on the attitudinal scale.

The second instrument is a standardized Trigonometry Proficiency Test to measure the student's performance in Trigonometry. It has a 40-item multiple-choice type of test. The students were advised to choose their answers by encircling the letter of their choice.

f) Data Gathering Procedure

- **Preliminary Stages.** The researcher has invested significant time, effort, and collaboration in constructing the questionnaire to serve the intended respondents. The survey questionnaire comprises relevant questions that have been updated according to the accepted conceptual framework of the researcher's supervisor. Due to the COVID-19 outbreak, the instrument was converted into a Google form. The researcher then sent a letter to the program director's office, suggesting a study be done there.
- **Data Gathering Procedure.** The survey questionnaire was distributed using the Internet once the Board had given a signal to proceed with the gathering of data. The data were gathered at least two weeks to disseminate the form and get enough respondents. The researcher then automatically retrieved the survey questionnaire.
- **Post Data Gathering Stage.** After garnering the sample respondents, the data were statistically treated. Statistical interpretations were supported with professional recognition when representing significant results, conclusions, and actions.

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- **Data Privacy.** Formal consent was sought from the schools and respondents with the permission of the college deans. Respondents were assured that the information gathered would be kept strictly confidential. Their responses and information gathered were used only for research purposes.
- **Ethical Considerations.** The researcher ensured that the participants' confidentiality was respected and maintained. The researcher needed respondents to fill out a consent form before they could begin answering the online questionnaires. The consent form's concept is that the researcher provided enough information and verification about the study to allow participants to be fully informed about the benefits of participating in the research and make an informed and freely given decision about whether or not to participate without being coerced. Only authorized personnel, such as the researcher, were given access to all the information acquired and retrieved from the participants.

This research has ethical implications for addressing and promoting the search for knowledge and truth by preventing data fabrication or falsification. To avoid such hazards, the participants in this study are informed of everything they need to know about the study's purpose, duration, and process. It is entirely up to you whether or not you choose to participate in this study. The participants will not be forced to participate in the study if they do not want to. If, for any reason, participants choose to withdraw from the investigation once it has begun, they may do so without being questioned. There will be no pressure on the participants to continue. There will be no negative consequences if you decline or withdraw from the study.

Throughout the survey procedures, the researcher complied with the ethical research considerations. Before responding to the computerized questionnaire, the researcher obtained informed consent from the respondents. The researcher kept the respondents' sensitive information and identities protected.

The researcher followed ethical research guidelines throughout the survey methods. The respondents gave their informed consent to the researchers before responding to the computerized questionnaire. The researcher kept all of the respondents' personal information and identities safe.

g) Statistical Treatment of Data

The researcher used the following statistical formulas to treat the gathered data from the respondents.

To treat the gathered data on the profile of the respondents, frequency, simple percentage, mean, and standard deviation were used.

To treat the gathered data on the level of attitudes toward Trigonometry of the respondents, weighted mean and standard deviation were used.

To treat the gathered data on the respondents' level of performance in Trigonometry, frequency, simple percentage, mean, and standard deviation were used.

On the test of the significant relationship between the profile of the respondents and their level of attitudes and performance in Trigonometry, the Chi-square test of independence was used.

ANOVA tested the significant differences in attitudes toward Trigonometry and its level of performance in Trigonometry when grouped by its profile.

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h) Scoring Procedure

The following with parametric scaling was used to determine students' attitudes toward Trigonometry.

Scale	Numerical	Descriptive Rating	Verbal Interpretation
4	3.25 - 4.00	Very Positive	The respondents strongly agree with the statements.
3	2.50 - 3.24	Positive	The respondents agree with the statements.
2	1.75 - 2.49	Negative	The respondents disagree with the statements.
1	1.00 - 1.74	Very Negative	The respondents strongly disagree with the statements.

The following with parametric scaling was used to determine students' performance in Trigonometry.

Scoring Range	Descriptive Rating	Verbal Description
40	Excellent	100% of the test the student has answered correctly.
31 - 39	Very Proficient	76% to 90% of the test the student has answered correctly.
21 - 30	Proficient	51% to 75% of the test the student has answered correctly.
11 - 20	Less Proficient	26% to 50% of the test the student has answered correctly.
1 - 10	Poor	0% to 25% of the test the student has answered correctly.

D. DEFINITION OF TERMS

The following terms are operationally and conceptually defined.

- **Attitudes Toward Trigonometry.** This study refers to students' behavior in learning Trigonometry, which includes the students' Confidence in Learning, Attitude Towards Success, Mathematics as a Male Domain, and Usefulness in Trigonometry.
- **Basic Education Learning Continuity Plan.** This refers to activities to ensure students' learning progress amidst natural calamities, storms, fires, and pandemics.
- **Blended Learning.** This is a learning method that combines face-to-face teaching and online instruction--ideally leveraging the strengths of each.
- **Covid-19 Pandemic.** An infectious disease caused by the SARS-CoV-2 virus that brought lockdown and health protocols closing HEIs.
- **Learning Activity Sheet.** This provides information and instruction, the method for engaging in activities, and links to publications and independent media to better the educational landscape.
- **Performance in Trigonometry.** This study refers to scores the students earned in Trigonometry deemed necessary to them in learning the subject despite the pandemic. It includes polynomials, expressions, equations, and the like.
- **Profile of the Respondents.** This refers to the age and gender of the college students enrolled in Trigonometry classes.
- **Self-Learning Modules (SLMs).** In this study, teachers developed materials to improve students' learning in Trigonometry.
- **Trigonometry.** This study refers to the subject enrolled by college students at Biliran Province State University. It includes the characters and other fundamental symbols used to represent parameters and variables in equations and calculations in this branch of mathematics.

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CHAPTER 2

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the data's descriptive analysis, evaluation, correlation, and information gathered.

A. Profile of the Respondents

Table 1 presents the profile of the respondents.

Profile	Frequency	Percentage	Rank
Age [in years]			
27 - 28	1	2.94	3
25 - 26	1	2.94	3
21 - 22	6	17.65	2
19 - 20	20	58.82	1
17 - 18	6	17.65	2
Mean : 19.74			
StDev : 2.23			
Gender			
Male	11	32.40	2
Female	23	67.60	1

Table 1: Profile of the Respondents

The respondents were 34 freshmen Bachelor in Secondary Education students majoring in Mathematics. Using Blended Learning, they are enrolled in Trigonometry during the second semester of the school year 2021-2022. Since participants are selected depending on their availability, willingness, and eligibility to engage in the study, the researcher applied non-probability convenience sampling.

As depicted inTable 1, in terms of the age profile of the students, it can be gleaned that most respondents are 19 to 20 years old (58.82%). This is followed by 17 to 18 years old and 21 to 22 years old with six respondents (17.65%). Also, the table revealed 23 female and 11 male respondents in the study.

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B. LEVEL OF ATTITUDES OF THE RESPONDENTS TOWARD TRIGONOMETRY

a) Confidence in Learning of the Respondents

Table 2 presents the overall mean for the level of confidence in learning of the respondents.

(N = 34)

Indicators	Weighted Mean	StDev	Verbal Interpretation
1. I have felt secure about attempting Trigonometry.	3.06	0.42	Positive
2. I am sure I could do advanced work in Trigonometry.	2.88	0.59	Positive
3. I am sure that I can learn Trigonometry.	3.32	0.47	Very Positive
4. I think I could handle more difficult Trigonometry.	2.68	0.53	Positive
5. I can get good grades in Trigonometry.	3.03	0.52	Positive
6. I have a lot of self-confidence when it comes to Trigonometry.	2.68	0.53	Positive
7. I am no good at Trigonometry.	2.38	0.74	Negative
8. I do not think I could do advanced Trigonometry.	2.50	0.66	Agree
9. I am not the type to do well in Trigonometry.	2.41	0.78	Negative
10. For some reason, even though I study, Trigonometry seems unusually hard for me.	2.65	0.73	Positive
11. Most subjects I can handle are okay, but I have a knack for messing up.	2.82	0.67	Positive
12. Trigonometry has been my worst subject.	1.91	0.57	Negative
Overall Mean	**2.69**	**0.60**	**Positive**

Table 2: Confidence in Learning of the Respondents

Range: 1.00-1.74 Very Negative; 1.75-2.49 Negative; 2.50-3.24 Positive; 3.25-4.00 Very Positive

Table 2 shows that the overall mean for the level of confidence in learning was 2.69 (Positive), with a standard deviation of 0.60. This indicates that the student's acceptance of the confidence in learning about trigonometry was viewed favorably.

Also, the table shows that the indicator, “I am sure that I can learn Trigonometry," got the highest mean of 3.32 (Very Positive) with a standard deviation of 0.47. While the indicator, “Trigonometry has been my worst subject," got the lowest mean of 1.91 (Negative) with a standard deviation of 0.57.

This implies to the study that their confidence level is affected by their security in attempting Trigonometry, which entails that because they agree that they are secure, they are more confident in their learning of Trigonometry. Due to this, they also agree that they are sure they could do advanced work in Trigonometry.

It is seen that they are confident because of their answers that they can handle difficult work in Trigonometry, and they will get good grades in Trigonometry, accentuating their agreement on self-confidence in Trigonometry. This is strengthened when they disagree with the idea that they are bad at Trigonometry. However, the students are also honest, stating they agree with the concept that they cannot handle advanced Trigonometry because it seems unusually hard for them.

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b) Attitudes Towards Success of the Respondents

Table 3 presents the attitudes towards success of the respondents.

(N = 34)

Indicators	Weighted Mean	StDev	Verbal Interpretation
1. It would make me happy to be recognized as an excellent student in Trigonometry.	3.29	0.52	Very Positive
2. I would be proud to be an outstanding student in Trigonometry.	3.50	0.51	Very Positive
3. I would be happy to get top grades in Trigonometry.	3.53	0.56	Very Positive
4. It would be really great to win a prize in Trigonometry.	3.29	0.52	Very Positive
5. Being first in a Trigonometry competition would make me pleased.	3.06	0.42	Positive
6. Being regarded as smart in Trigonometry would be a great thing.	3.29	0.52	Very Positive
7. Winning a prize in mathematics would make me feel unpleasantly conspicuous.	2.41	0.56	Negative
8. People would think that I was some kind of creep if I got A's in Trigonometry.	2.21	0.54	Negative
9. If I got the highest grade in Trigonometry, I would try to hide it.	2.21	0.77	Negative
10. If I got the highest grade in math, I would prefer that no one knew.	2.27	0.79	Negative
11. It would make people like me less if I were a really good Trigonometry student.	2.15	0.66	Negative
12. I do not like people to think I am smart in Trigonometry.	2.50	0.79	Positive
Overall Mean	**2.81**	**0.60**	**Positive**

Table 3: Attitudes Towards Success of the Respondents

Range: 1.00-1.74 Very Negative; 1.75-2.49 Negative; 2.50-3.24 Positive; 3.25-4.00 Very Positive

Table 3 shows that the overall mean for the level of attitudes toward success was 2.81 (Positive), with a standard deviation of 0.60. This implies understanding how certain different but interrelated variables such as background, motivation, and social support could explain student attitudes towards Trigonometry and an understanding of the defining characteristics of these attitudes in the blended learning approach.

Also, the table shows that the indicator, “I would be happy to get top grades in Trigonometry," got the highest mean of 3.53 (Very Positive) with a standard deviation of 0.56. While the indicator, “It would make people like me less if I were a really good Trigonometry student," got the lowest mean of 2.15 (Negative) with a standard deviation of 0.66.

This implies that attitudes toward success rely on Trigonometry among the respondents. Winning in Trigonometric competitions and having high grades in Trigonometry make them a person who is happy that they won and have subjects like Trigonometry. This entails that they disagree that having high grades in Trigonometry makes you creep. The respondents also frown on being shy or not letting anyone know that they have high grades in Trigonometry. This means that attitudes towards success are affected positively by Trigonometry.

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Although the results cannot be interpreted as indicating a causal relationship between positive emotions and achievement, the results indicate how positive emotions in mathematics learning can contribute to a more balanced picture of the role of affective states in mathematics learning (Daker et al., 2021).

c) Mathematics as a Male Domain

Table 4 presents the overall mean for the Mathematics as male domain.

(N = 34)

Indicators	Weighted Mean	StDev	Verbal Interpretation
1. Females are as good as males in Trigonometry.	2.97	0.90	Positive
2. Studying Trigonometry is just as appropriate for women as for men.	2.94	0.89	Positive
3. I would trust a woman just as much as I would trust a man to figure out important calculations.	3.24	0.74	Positive
4. Girls can do just as well as boys in Trigonometry.	3.41	0.74	Very Positive
5. Males are not naturally better than females in Trigonometry.	2.24	0.65	Negative
6. Women certainly are logical enough to do well in Trigonometry.	2.62	0.82	Positive
7. It is hard to believe a female could be a genius in Trigonometry.	2.06	0.78	Negative
8. When a woman has to solve a Trigonometry problem, it is feminine to ask a man for help.	2.27	0.71	Negative
9. I would have more faith in an answer to a Trigonometry problem solved by a man than a woman.	2.00	0.70	Negative
10. Girls who enjoy studying Trigonometry are a bit peculiar.	2.29	0.80	Negative
11. Trigonometry is for men. Arithmetic is for women.	1.88	0.64	Negative
12. I would expect a woman mathematician to be a masculine type of person.	1.97	0.58	Negative
Overall Mean	**2.49**	**0.75**	**Negative**

Table 4: Mathematics as a Male Domain

Range: 1.00-1.74 Very Negative; 1.75-2.49 Negative; 2.50-3.24 Positive; 3.25-4.00 Very Positive

Table 4 shows that the overall mean for the level of mathematics as a male domain was 2.49 (Negative) with a standard deviation of 0.75. This implies that students tended not to stereotype mathematics as a male domain, but to the extent of stereotyping, males were stereotyped more than females. There have been changes in social attitudes about females and mathematics, but the issue of gender equity in mathematics continues.

Also, the table shows that the indicator, “Girls can do just as well as boys in Trigonometry," got the highest mean of 3.41 (Very Positive) with a standard deviation of 0.74. While the indicator, “Trigonometry is for men. Arithmetic is for women," got the lowest mean of 1.88 (Negative) with a standard deviation of 0.64.

This implies to the study that males and females have an equal capacity to perform in Trigonometry and that male dominance in Trigonometry is not persisting. The respondents agreed that females are as good as males in Trigonometry. The respondents have a boosted confidence that Females can be trusted for calculations and that Trigonometry can be studied as appropriate by females, the same as males. This entails that females are logical beings like males who can handle Trigonometry. This resulted in a disagreement that Males are better than females when it comes to Trigonometry or that females are not logical enough to

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handle and study Trigonometry as that males. They also disagreed that women mathematicians are the masculine type of people or peculiar. This means they disagree that Trigonometry is just for males and that females are mere arithmetic solvers.

Students who were able to solve problems with procedural skills will still be able to obtain good marks in the examinations, although they may have a weak conceptual understanding of trigonometry. The students, for sure, may obtain excellent marks for the examinations, but the knowledge retained may be short-term.

The study byZamora et al,. (2019) found that may be taken as evidence because when students obtained good marks after they had learned the lesson recently and produced unsatisfactory marks.

d) Usefulness of Trigonometry

Table 5 presents the usefulness of mathematics concerning respondents.

(N = 34)

Indicators	Weighted Mean	StDev	Verbal Interpretation
1. I will need Trigonometry for my future work.	3.03	0.67	Positive
2. I study Trigonometry because I know how useful it is.	3.03	0.63	Positive
3. Knowing Trigonometry will help me earn a living.	2.85	0.74	Positive
4. Trigonometry is a worthwhile and necessary subject.	3.03	0.72	Positive
5. I will need a firm mastery of Trigonometry for my future work.	2.85	0.78	Positive
6. I will use Trigonometry in many ways as an adult.	2.82	0.67	Positive
7. Trigonometry is of no relevance to my life.	2.06	0.60	Negative
8. Trigonometry will not be important to me in my life's work.	2.09	0.57	Negative
9. I see Trigonometry as a subject I will rarely use in my daily life as an adult.	2.41	0.70	Negative
10. Taking Trigonometry is a waste of time.	1.91	0.62	Negative
11. In terms of my adult life, it is not important for me to do well in Trigonometry in high school.	2.00	0.70	Negative
12. I expect little use for Trigonometry when I get out of school.	2.62	0.70	Positive
Overall Mean	**2.56**	**0.68**	**Positive**

Table 5: The Usefulness of Trigonometry as Perceived by the Respondents

Range: 1.00-1.74 Very Negative; 1.75-2.49 Negative; 2.50-3.24 Positive; 3.25-4.00 Very Positive

Table 5 shows that the overall mean for the use of Trigonometry was 2.56 (Positive) with a standard deviation of 0.68. This means that great trigonometry skills allow students to work out complex angles and dimensions in relatively little time. In architecture, engineering, and many sciences, trigonometry is one of the most valuable branches of mathematics.

Also, the table shows that the indicators "I will need Trigonometry for my future work," "I study Trigonometry because I know how useful it is," and "Trigonometry is a worthwhile and necessary subject" got the highest mean of 3.03 (Positive) with a standard deviation of 0.67, 0.63, and 0.72 respectively. While the indicator, "Taking Trigonometry is a waste of time," got the lowest mean of 1.91 (Negative) with a standard deviation of 0.62.

This implies the study that Trigonometry is very useful to the respondents. They certainly agree that they will need Trigonometry for their future work because they know how useful it is to make or help them earn a living. However, they need complete mastery of Trigonometry before it entirely affects their life.

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These claims were supported by their disagreement with the idea that Trigonometry is irrelevant or will not be necessary for their life. They also disagreed that they will not use it in their daily life as an adult and that it is not a waste of time during their adult life.

Trigonometry instruction guides students to improve their capacity for deductive logic and representing abstract issues. Surveying, navigation, engineering, and other fields of mathematics all heavily rely on trigonometric concepts.

e) Summary of the Level of Attitudes Towards Trigonometry
Table 6 presents the summary of the level of attitudes towards Trigonometry.

(N = 34)

Indicators	Weighted Mean	StDev	Verbal Interpretation
A. Confidence in Learning	2.69	0.60	Positive
B. Attitudes Towards Success	2.81	0.60	Positive
C. Mathematics as a Male Domain	2.49	0.75	Negative
D. The Usefulness of Mathematics	2.56	0.68	Positive
Overall Mean	**2.64**	**0.66**	**Positive**

Table 6: Summary of the Level of Attitudes Towards Trigonometry

Range: 1.00-1.74 Very Negative; 1.75-2.49 Negative; 2.50-3.24 Positive; 3.25-4.00 Very Positive

Table 6 shows that the overall mean for the respondents' attitudes towards Trigonometry was 2.64 (Positive) with a standard deviation of 0.66.

Also, the table shows that the Attitudes Towards Success got the highest mean of 2.81 (Positive) with a standard deviation of 0.60. At the same time, Mathematics as a Male Domain got the lowest mean of 2.49 (Negative) with a standard deviation of 0.75.

This implies that Trigonometry influences the students' confidence level as they are more confident when they understand Trigonometry and less confidence when their knowledge of Trigonometry is not well accentuated.

Moreover, attitudes toward success can be visible when Trigonometry is present in the curriculum, which students equate to their success as a focal factor. However, they pointed out or revealed that the subject is more male-dominant than that of the other sex. Nonetheless, the overall usefulness of Mathematics is appreciated by the students. Thus, the general population agrees with all the indicators because of their application to their academic performance.

C. PERFORMANCE OF RESPONDENTS IN TRIGONOMETRY

Trigonometry is a prerequisite subject for learning Calculus. Learning Trigonometry problems requires an understanding of multiple interrelated mathematical concepts, such as algebraic transformation skills, geometry knowledge, and reasoning of graphical representation of concepts. Owing to the need to learn multiple interrelated concepts, students experience great difficulty when learning Trigonometry problems.

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Table 7 presents the performance of the respondents in Trigonometry.

Raw Score	Grade (Percent)	Verbal Interpretation	Frequency	Percentage
40	90 and above	Excellent	-	-
31 - 39	85-89	Very Proficient	-	-
21 - 30	80 -84	Proficient	-	-
11 - 20	75-79	Less Proficient	30	88.24
1 - 10	Below 75	Poor	4	11.76
	Total		**34**	**100.00**
		Highest Score :		17
		Lowest Score :		6
		Mean :		13.27
		StDev :		2.67

Table 7: Performance of the Respondents in Trigonometry

The table shows that there were 30 respondents (88.24%) who got a raw score in Trigonometry between 11 to 20 (Less Proficient) and four respondents (11.76%) got a raw score of 10 and less than. Also, it is revealed that students got the highest raw score of 17 and the lowest score of 6. The performance test recorded an average raw score of 13.27 with a standard deviation of 2.67.

From the result, it can be implied that there is an improved performance among the learners after they were exposed to the learning. Hence it further implies that the effectivity is on the positive rate and reference.

This is parallel to the study of Hidayati (2020),which showcases that errors in learning entail that there is little exposure to solving Trigonometry, but when they are given a chance to engage more in Trigonometry, their performance improves and becomes better.

The study of Indrapangastuti et al., (2021) concluded that blended learning is more effective for improving students' achievement of mathematics concepts. The blended learning model is an alternative learning model to improve students' achievement of mathematical concepts. This blended learning model is based on the belief that students can best develop their thinking skills through problem-based learning with various sources of information, including face-to-face, online, and practical activities.

D. TEST OF SIGNIFICANT RELATIONSHIP

The study hypothesized that there is no significant correlation between the demographic profile and attitudes toward Trigonometry. Table 8 presents the results.

	Chi-Square	df	Critical Value	Significance	Result
A. Age					
a. Attitudes Towards Trigonometry	0.051	2	5.991	Not Significant	Accept Ho
b. Performance in Trigonometry	2.210	2	5.991	Not Significant	Accept Ho
B. Gender					
a. Attitudes Towards Trigonometry	0.157	1	3.841	Not Significant	Accept Ho
b. Performance in Trigonometry	0.112	1	3.841	Not Significant	Accept Ho

Table 8: Significant Relationship Between the Respondent Profile and Attitudes and Performance in Trigonometry

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The table shows that the profiles of the respondents (age and gender) do not have significant relationships with their attitudes and performance in Trigonometry. The computed Chi-square values are lesser than their respective critical values. This means that the students' ages and genders do not correlate with their attitudes and performances in Trigonometry. These variables do not play a significant role in the attitudes and performance of students in Trigonometry.

E. TEST OF SIGNIFICANT DIFFERENCE

The study hypothesized that there is no significant difference in the attitudes and performance in Trigonometry. Table 9 presents the results.

Grouped By	F-value	P-value	Significance	Result
A. Attitudes Toward Trigonometry				
Age	0.74	0.642	Not Significant	Accept Ho
Gender	0.14	0.709	Not Significant	Accept Ho
B. Performance Trigonometry				
Age	1.86	0.119	Not Significant	Accept Ho
Gender	0.45	0.508	Not Significant	Accept Ho

Table 9: Significant Difference in the Attitudes and Performance in Trigonometry

The table shows that the attitudes and performance in Trigonometry, when grouped by their profiles, do not have significant differences. The computed p-values are significantly higher than 0.05. This means that students' attitudes and performances in Trigonometry do not differ.

Students' learning and performance in mathematics is affected by several factors, including students' attitude. The results revealed that, in general, both female and male students held positive attitudes toward mathematics, and there was no significant difference in attitudes between genders toward mathematics (Anokye-Poku&Ampadu, 2020).

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CHAPTER 3

SUMMARY, FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the findings, conclusion, and recommendations based on the presented data and information gathered, evaluated, analyzed, and correlated.

A. SUMMARY

This study determined the attitudes and performance of college students in Trigonometry using blended learning at Biliran Province State University during the school year 2022-2023 amidst the COVID-19 pandemic.

It employed a descriptive correlational study to gather data regarding the attitudes and performance of 34 freshman college education students who major in mathematics and are enrolled in Trigonometry.

The respondents utilized the two adopted questionnaires (Fennema-Sherman Mathematics Attitude Scales and the Trigonometry Proficiency Test. The gathered data were statistically treated using frequency, simple percentage, rank, weighted mean, standard deviation, Chi-square test of independence, and ANOVA.

B. FINDINGS

On the profile of the respondents, the study shows that most respondents are females 19 to 20 years old.

On the level of attitudes of the respondents toward Trigonometry in the use of blended learning, the study reveals that the students have positive attitudes toward Trigonometry.

On the respondents' performance in Trigonometry in the use of blended learning, the study shows that the students are less proficient in Trigonometry; that is, most scored 75 to 79.

On the significant relationship between the respondents' profile and attitudes towards Trigonometry, the study revealed that the age and gender of the respondents do not have significant relationships with their attitudes and performance in Trigonometry.

On the test of significant differences in the attitudes and performance in Trigonometry when grouped by its profile, the study shows no significant difference in the attitudes and performance of the students in Trigonometry.

C. CONCLUSION

In conclusion, Trigonometry is very useful to students because it enables them to solve problems that are genuinely related to their daily lives and may contribute to their success, as revealed in the study. Though the students found it useful, they scored less proficient in the performance test in Trigonometry. These students need to be honed to improve their learning in the subject, helping them understand the underlying concepts in higher mathematics.

By adhering to the fundamentals of Trigonometry, students, through their teachers, can acquire sufficient knowledge in Trigonometry, which is very useful in learning higher mathematics. They can dig deeper into the students' attitudes that affect their performance in Trigonometry with the use of blended learning. In this manner, the school is molding high-caliber future mathematics teachers who are ready for the demands of 21st-century teaching.

D. RECOMMENDATIONS

The researcher recommends that teachers handle Trigonometry to consider students learning backgrounds in choosing instructional strategies in a bended learning approach. It is suggested that teachers must align their methods with students' assessed learning needs and capabilities.

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CHAPTER 4

OUTPUT OF THE STUDY

A. Rationale

Implementing a blended learning modality in Trigonometry during the COVID-19 pandemic has shifted the educational landscape from in-person instruction to blended learning, affecting the student's performance in learning Trigonometry. The findings of this study provide recommendations for improving students' Trigonometry performance, as it was discovered that these students scored 11 to 20 (75 - 79%) on the 40-item test using the blended learning approach.

Students who have temporarily fallen behind require assistance with their studies and have the right to remedial classes. When difficulties in learning Trigonometry are identified, remedial teaching should begin immediately so that students do not fall further behind in their studies. It should be organized according to a plan and as often as necessary.

The teacher primarily takes the initiative of giving remedial classes. The teacher's task is to monitor the learning and growth of the student and the possible needs for support that may arise. Teachers must see to it that the learning materials in Trigonometry are valid and suits the academic needs of these students, which may result in a positive attitude toward the subject, thereby helping increase their performance in Trigonometry.

B. Objectives

The following are the objectives in the implementation of the Action Plan:

- Improve quality learning in Trigonometry by providing students with remedial classes to improve their performance in the subject.
- Customizing teaching-learning materials for blended learning to Trigonometry.
- Enhancing teaching on blended learning to faculty teaching Trigonometry subject.

C. Scheme of Implementation

The proposed output for implementing blended learning in teaching covers the areas of concern such as remedial class, learning materials, training and seminar on the implementation of the new normal, objectives, strategies, person involved, budget, source of budget, time frame, projected outcomes, actual accomplshments and remarks to achieve the goal for the implementation of blended learning in teaching Trigonometry.

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ACTION PLAN

Areas of Concern	Objectives	Strategies	Persons Involved	Budget	Source of Budget	Time Frame	Expected Outcome	Actual Accomplish-ment	Remarks
Remedial Class	Enhance quality learning on Trigonometry subject.	Conduct remedial classes on Trigonometry.	Students Faculty	20,000	BiPSU-STED	One year 2022-2023	Increased performance of the students in Trigonometry	100% monitored of the remedial class by the Program Chairperson	Conducted the remedial classes successfully
Learning Materials	Customize of teaching-learning material for Blended Learning	Developed critical thinking and problem-solving teaching-learning materials	Students Subject Teacher	20,000	GAA	One year 2022-2023	Increased performance of the students in Trigonometry	100% utilization of the customized teaching-learning material	Utilized the customized teaching-learning material for blended learning
C. Training and Seminar on the Implementation of the New Normal	Enhance teaching on blended learning	How to use LMS Moodle, google classroom and other learning managements system for faculty use.	Faculty	20,000	GAA	One year 2022-2023	Teachers enhanced the delivery of instruction through blended learning.	100% attendance during seminar	Conducted the training and seminar successfully

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ISSN No:-2456-2165

APPENDICES

APPENDIX A
TRANSMITTAL LETTERS

May 29, 2022

DR. VICTOR C. CAÑEZO, JR.
University President III
Biliran Province State University
Naval, Biliran

Dear Dr. Cañezo:

Good day!

I am a graduate school student at Cebu Technological University-Main Campus, taking up a Master of Arts in Education major in Teaching Mathematics. I am currently working on my thesis entitled **"PERFORMANCE AND ATTITUDES IN TRIGONOMETRY USING BLENDED LEARNING AMONG COLLEGE STUDENTS IN A STATE UNIVERSITY AMIDST THE COVID-19 PANDEMIC**," a major requirement of the course.

In line with this, I would like to ask permission from your good office to allow me to administer the questionnaires to the selected college students who are enrolled in Trigonometry this second semester, school year 2021-2022. Rest assured that the data gathered for this study will only be used for the said purpose and be taken care of with strict confidentiality. Attached are the informed consent and the sample questionnaires for your review.

I am hoping for your favorable response on this matter. Thank You, and God Bless.

Sincerely yours,

GERRY MAE V. GERVACIO
Master/and

Noted:

JONATHAN O. ETCUBAN, Ph.D. TM, Ph.D. EM
Adviser

Approved by:

VICTOR C. CAÑEZO, JR., Ed.D.
University President III

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May 29, 2022

DR. RYAN TEOFEL P. ARPON
Dean, School of Teacher Education
Biliran Province State University
Naval, Biliran

Dear Dr. Arpon:

Good day!

The undersigned is a graduate school student at Cebu Technological University-Main Campus taking up a Master of Arts in Education major in Teaching Mathematics. She is currently working on her thesis entitled **"PERFORMANCE AND ATTITUDES IN TRIGONOMETRY USING BLENDED LEARNING AMONG COLLEGE STUDENTS IN A STATE UNIVERSITY AMIDST THE COVID-19 PANDEMIC,"** a major requirement of the course.

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Hoping for your favorable response on this matter. Thank You, and God Bless.

All the best,

GERRY MAE V. GERVACIO
Master and

Noted:

JONATHAN O. ETQUBAN, Ph.D. TM, Ph.D. EM
Adviser

Approved by:

RYAN TEOFEL P. ARPON, Ed.D.
Dean, School of Teacher Education

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APPENDIX B

INFORMED CONSENT

This informed consent is for the studentswho are enrolled in Trigonometry during the second semester, school year 2022-2023, who will be used as respondents in the study. These respondents have direct experiences in implementing the blended learning in learning Trigonometry amidst the COVID-19 pandemic. I am inviting you to participate in research entitled, "Performanceand Attitudes in Trigonometry Using Blended Learning Among College Students in Biliran Province State University Amidst the COVID-19 Pandemic."

Principal Investigator : Gerry Mae V. Gervacio
Name of Organization : Graduate Programs
: Cebu Technological University
Adviser : Dr. Jonathan O. Etcuban

Part I: Information Sheet

Introduction

I am Gerry Mae V. Gervacio, a graduate student researcher from the Graduate Programs of the Cebu Technological University, Cebu City. I will give you the details and invite you to participate in the study. You do not have to decide whether or not to participate in the survey right now. You can discuss the findings with anybody you feel comfortable with before deciding.

There may be words on this consent form that you do not understand. Please ask me to come to a halt as we go over the facts, explaining. Please contact me if you have any questions.

Purpose of the Research

To provide information regarding your performance in Trigonometry using the blended learning. Also, this gathers data on students' attitudes toward Trigonometry despite the COVID-19 pandemic.

Type of Research Intervention

This research will involve your participation by responding to survey questionnaires that take about 30minutes to an hour of your time.

Respondent Selection

You are invited to participate in this research because your experiences in learning Trigonometry as a student can contribute much to my understanding and knowledge regarding the students' performances in Trigonometry amidst the pandemic.

Voluntary Participation

It is totally up to you whether or not you participate in this study. It is entirely up to you whether or not to engage. It is fine with me if you do not want to participate.

Procedures

I ask you to answer the survey questionnaires and your perceptions of your attitudes toward Trigonometry. I am inviting you to take part in this study as a respondent. If you accept, you will be given a survey questionnaire to answer, which is categorical, and you are going to rate these items based on your attitudes toward Trigonometry.

You have the option of not answering any of the questions during the survey questionnaire's execution. The recorded information is private, and no one else will access it while the survey questionnaire is administered.

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Duration

The research takes place over a month in total. I will visit you only once for the survey administration during that time.

Risks

If the discussion is on sensitive and personal issues and you may feel uncomfortable talking about some of the topics, you do not have to answer any questions in the survey. If you do not wish to do so, it is okay. You do not have to give us any reason not to respond to any question or refuse to participate in the research.

Benefits

To determine the respondents' performance in Trigonometry, attitudes, and experiences regarding the implementation of blended learning and provide implications for better opportunity practice that can help them in the four walls of the classroom.

Reimbursements

You will not be provided any incentive to take part in the study.

Confidentiality

The study may draw attention to other people in the community. I will not be sharing information about you. The information that I will collect from the survey will be kept private. Any information about you will have a number on it instead of you. It will not be shared with or given to anyone.

Part II: Certificate of Consent

I have been asked to participate in a study on students' performance and attitudes toward Trigonometry amidst the COVID-19 pandemic. The above information has been read to me or read to me. I have had the opportunity to ask questions regarding it, and all of my queries have been satisfactorily answered. I willingly agree to participate in this research.

_____

Respondent’s Signature

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APPENDIX C

SURVEY QUESTIONNAIRE

Dear **Students**,

Good day!

This questionnaire will help me develop an action plan for teachers and students that aims to quantify the data required to arrive at a reliable description of the mathematics proficiency and attitudes of the Grade 8 students toward mathematicsin the use of a modular approach.

All information collected in this study will be treated with the utmost confidentiality. While results will be made available, you are guaranteed that neither you nor your school will be identified in any report. Participation in this study is voluntary.

Below are the indicators; please put a check (✓) mark in the appropriate box. I am, therefore, asking for your assistance. Rest assured, all your answers will be treated with the utmost confidentiality.

Thank you, and God bless!

Researcher

Part I. Profile of Students

Below are questions related to the students' profiles. Please check the (✓) mark or fill the data in the appropriate space.

Age: _____ Gender: Male ☐ Female ☐

Part II. Student's Attitudes Toward Trigonometry Using Fennema-Sherman

In this study, students' attitudes toward Trigonometry are categorized into a) Confidence in Learning, b) Attitude Towards Success, c) Mathematics as a Male Domain, and d) Usefulness. Below are the items related to students' attitudes towards Trigonometry; please put a check (✓) mark in the appropriate box.

4 - Strongly Agree
3 - Agree
2 - Disagree
1 - Strongly Disagree

A. Confidence in Learning

	Indicators	SA (4)	A (3)	D (2)	SD (1)
1.	I have felt secure about attempting Trigonometry.				
2.	I am sure I could do advanced work in Trigonometry.				
3.	I am sure that I can learn Trigonometry.				
4.	I think I could handle more difficult Trigonometry.				
5.	I can get good grades in Trigonometry.				
6.	I have a lot of self-confidence when it comes to Trigonometry.				
7.	I am no good at Trigonometry.				
8.	I do not think I could do advanced Trigonometry.				
9.	I am not the type to do well in Trigonometry.				
10.	For some reason, even though I study, Trigonometry seems unusually hard for me.				
11.	Most subjects I can handle okay, but I have a knack for messing up me.				
12.	Trigonometry has been my worst subject.				

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B. Attitude Towards Success

	Indicators	SA (4)	A (3)	D (2)	SD (1)
1.	It would make me happy to be recognized as an excellent student in Trigonometry.				
2.	I would be proud to be an outstanding student in Trigonometry.				
3.	I would be happy to get top grades in Trigonometry.				
4.	It would be really great to win a prize in Trigonometry.				
5.	Being first in an Trigonometry competition would make me pleased.				
6.	Being regarded as smart in Trigonometry would be a great thing.				
7.	Winning a prize in mathematics would make me feel unpleasantly conspicuous.				
8.	People would think that I was some kind of creep if I got A's in Trigonometry.				
9.	If I got the highest grade in Trigonometry, I would try to hide it.				
10.	If I got the highest grade in math, I'd prefer no one knew.				
11.	It would make people like me less if I were a really good Trigonometry student.				
12.	I do not like people to think I am smart in Trigonometry.				

C. Mathematics as a Male Domain

	Indicators	SA (4)	A (3)	D (2)	SD (1)
1.	Females are as good as males in Trigonometry.				
2.	Studying Trigonometry is just as appropriate for women as for men.				
3.	I would trust a woman just as much as I would trust a man to figure out important calculations.				
4.	Girls can do just as well as boys in Trigonometry.				
5.	Males are not naturally better than females in Trigonometry.				
6.	Women certainly are logical enough to do well in Trigonometry.				
7.	It is hard to believe a female could be a genius in Trigonometry.				
8.	When a woman has to solve an Trigonometry problem, it is feminine to ask a man for help.				
9.	I would have more faith in the answer to an Trigonometry problem solved by a man than a woman.				
10.	Girls who enjoy studying Trigonometry are a bit peculiar.				
11.	Trigonometry is for men. Arithmetic is for women.				
12.	I would expect a woman mathematician to be a masculine type of person.				

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D. Usefulness

	Indicators	SA (4)	A (3)	D (2)	SD (1)
1.	I will need Trigonometry for my future work.				
2.	I study Trigonometry because I know how useful it is.				
3.	Knowing Trigonometry will help me earn a living.				
4.	Trigonometry is a worthwhile and necessary subject.				
5.	I will need a firm mastery of Trigonometry for my future work.				
6.	I will use Trigonometry in many ways as an adult.				
7.	Trigonometry is of no relevance to my life.				
8.	Trigonometry will not be important to me in my life's work.				
9.	I see Trigonometry as a subject I will rarely use in my daily life as an adult.				
10.	Taking Trigonometry is a waste of time.				
11.	In terms of my adult life, it is not important for me to do well in Trigonometry in high school.				
12.	I expect to have little use for Trigonometry when I get out of school.				

Thank you so much for your cooperation.

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APPENDIX D

PERFORMANCE TEST INTRIGONOMETRY

Multiple Choice. Encircle the letter of the correct answer.

1. Secθ equals to
   a. 1/cosecθ b. 1/secθ c. 1/cosθ d. 1/cotθ

2. The x-axis and y-axis divides the plane in four regions, called
   a. quadrants b. segments c.sectors d. positions

3. The fundamental trigonometric ratios are
   a. 4 b. 5 c. 6 d. 3

4. Angles between 180° and 270° lies in
   a. 1st quadrant c. 2nd quadrant
   b. 3rd quadrant d. 4th quadrant

5. The angle subtended at the center of the circle by an arc, whose length and radius are equal is called
   a. initial side c. radian
   b. vertex d. point of intersection

6) Which of the following is the correct value of cot 10^0.cot 20^0.cot 60^0.cot 70^0.cot 80^0?
a. $1/\sqrt{3}$ b. $\sqrt{3}$ c.-1 d. 1

7) If a sin 45^0 = b cosec 30^0, what is the value of a^4/b^4?
a. 6^3 b. 4^3 c. 2^3 d. None of these

8) If tan θ + cot θ = 2, then what is the value of $\tan^{100}\theta + \cot^{100}\theta$?
a. 1 b. 3 c. 2 d. None of these

9) If the value of $\alpha + \beta = 90^0$, and $\alpha : \beta = 2 : 1$, then what is the ratio of cos α to cos β ?
a. 1 : 3 b. $\sqrt{3} : 1$ c.$1 : \sqrt{3}$ d. None of these

10) If θ is said to be an acute angle, and $7\sin^2\theta + 3\cos^2\theta = 4$, then what is the value of tan θ?
a. 1 b. $\sqrt{3}$ c. $1/\sqrt{3}$ d. None of these

11) What is the measure of X to the nearest degree if sin X 4/9 ?
a. 7^o b. 64^o c. 26^o d. 83^o

12) If θ is said to be an acute angle, and $4\cos^2\theta - 1 = 0$, then what is the value of $\tan(\theta - 15^0)$?
a. 1 b. $\sqrt{2}$ c. $1/\sqrt{3}$ d. None of these

13) If the value of $\theta + \varphi = \pi/2$, and $\sin\theta = 1/2$, what will be the value of sinφ?
a. 1 b. $\sqrt{2}$ c. $\sqrt{3}/2$ d. $2/\sqrt{3}$

14) A student sees a bird on top of a 12m high light pole. The student is standing 7.____ 20m from the base of the pole. At what angle must the student incline her camera to take a picture of the bird?
a. 31^o b. 37^o c. 59^o d. 87^o

15) What will be the value of $1 - 2\sin^2\theta$, if $\cos^4\theta - \sin^4\theta = 2/3$?
a. 1 b. 3/2 c. 2 d. 2/3

16) What is the value of $\tan\theta/(1 - \cot\theta) + \cot\theta/(1 - \tan\theta)$?
a. $\tan\theta + \cot\theta + 1$ c. $\tan\theta - \cot\theta - 1$
b. $\tan\theta - \cot\theta + 1$ d. None of these

17) Which of the following is not correct to the nearest hundredth? z
a. $\sin75^o$ 0.97 c. $\tan37^o$ 0.75
b. $\tan18^o$ 0.23 d. $\cos46^o$ 0.69

18) What will be the value of $(\sqrt{3}\tan\theta + 1)$, if $r\sin\theta = 1$, and $r\cos\theta = \sqrt{3}$?
a. 2 b. 1 c. 0 d. None of these

19) What is the value of $(\tan^2\theta - \sec^2\theta)$?
a. 2 b. -1 c.1 d. None of these

20) If $\sin\theta = 0.7$, then what is the value of $\cos\theta$, if $0^0 <= \theta < 90^0$?
a. $\sqrt{51}$ b. $\sqrt{49}$ c.0.3 d. None of these

21) What is the value of $\tan3\theta$, If $\tan7\theta.\tan2\theta = 1$?
a. $\sqrt{3}$ b. $1/\sqrt{3}$ c. $-1/\sqrt{3}$ d. None of these

22) What will be the value of $3\cos80^0.\text{cosec}10^0 + 2\cos59^0.\text{cosec}31^0$?
a. 3 b. 1 c.5 d. None of these

23) If $\sin(\theta + 18^0) = \cos 60^0$, then what is the value of $\cos5\theta$, where $0^0 < \theta < 90^0$?
a. 0 b. ½ c.1 d. 2

24) If $\cos A = 2/3$, then what is the value of $\tan A$?
a. 0 b. ½ c.5/2 d. $\sqrt{5}/2$

25) What will be the simplified value of $(\sec A \sec B + \tan A \tan B)^2 - (\sec A \tan B + \tan A \sec B)^2$?
a. 0 b. 1 c. -1 d. 2

26) What is the simplified value of $(\text{cosec } A - \sin A)^2 + (\sec A - \cos A)^2 - (\cot A - \tan A)^2$?
a. 0 b. 1 c.-1 d. 2

27) What will be the value of $\sec^4\theta - \tan^4\theta$, if $\sec^2\theta + \tan^2\theta = 7/12$?
a. ½ b. 7/12 c.1 d. 2/3

28) What is the value of $\cos^2 20^0 + \cos^2 70^0$?
a. $\sqrt{2}$ b. 0 c.1 d. None of these

29) If $r\cos\theta = \sqrt{3}$, and $r\sin\theta = 1$, what is the value of $r^2\tan\theta$?
a. $4/\sqrt{3}$ b. $\sqrt{3}/4$ c.$\sqrt{3}$ d. None of these

30) Which of the following is the correct value of $\tan^2 A + \cot^2 A - \sec^2 A \text{ cosec}^2 A$, where $0^0 < A < 90^0$?
a. 4 c. 2
b. -2 d. None of these

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31) If $1 + \cos^2 \theta$ is equal to $3 \sin \theta . \cos \theta$, then what is the value of $\cot \theta$?

a. 1 c. 0
b. 2 d. 3

32) If the value of $\tan \theta = 4/3$, then which of the following is the correct value of $(3 \sin \theta + 2 \cos \theta) / (3 \sin \theta - 2 \cos \theta) = ?$

a. 1 c. -3
b. 2 d. 3

33) If the value of $\tan 15^0$ is $2 - \sqrt{3}$, then what is the value of $\tan 15^0 \cot 75^0 + \tan 75^0 \cot 15^0$?

a. 14 c. -13
b. 21 d-14

34) Which of the following is the correct relation between A and B, if $A = \tan 11^0 . \tan 29^0$, and $B = 2 \cot 61^0 . \cot 79^0$?

a. A = B c. A = -B
b. A = 2B d. 2A = B

35) If $\sin \theta \times \cos \theta = 1/2$, then what is the value of $\sin \theta - \cos \theta$?

a. 0 c. 1
b. -1 d. None of these

36) If the value of $\sin(\theta + 30^0)$ is $3/\sqrt{12}$, then what is the value of $\cos^2 \theta$?

a. ¾ c. 4/3
b. ¼ d. None of these

37) If the value of $4 \cos^2\theta - 4\sqrt{3} \cos \theta + 3 = 0$, then what is the value of θ?

a. 60^0 c. 30^0
b. 45^0 d. None of these

38) Which of the following is the correct value of $\cos^2 55^0 + \cos^2 35^0 + \sin^2 65^0 + \sin^2 25^0$?

a. 0 c. 3
b. 2 d. None of these

39) If the value of $\tan 9^0 = p/q$, then what is the value of $\sec^2 81^0 / 1 + \cot^2 81^0$?

a. p^2/q^2 c. 1
b. q^2/p^2 d. None of these

40) If $\cot 45^0 . \sec 60^0 = A \tan 30^0 . \sin 60^0$, then which of the following is the correct value of A?

a. 4 c. 1
b. $\sqrt{2}$ d. None of these

ISSN No:-2456-2165

APPENDIX E

STATISTICAL REPORTS

——————— 09/08/2022 11:23:17 PM ———————————————

Descriptive Statistics: Age

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Age	34	0	19.735	0.383	2.233	17.000	19.000	19.000	20.250

Variable	Maximum
Age	28.000

Tally for Discrete Variables: AgeG, Gender

AgeG	Count	Percent	Gender	Count	Percent
17-18	6	17.65	Female	23	67.65
19-20	20	58.82	Male	11	32.35
21&ab	8	23.53	N=	34	
N=	34				

Descriptive Statistics: Con1, Con2, Con3, Con4, Con5, Con6, Con7, Con8, ...

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Con1	34	0	3.0588	0.0724	0.4222	2.0000	3.0000	3.0000	3.0000
Con2	34	0	2.882	0.101	0.591	2.000	2.750	3.000	3.000
Con3	34	0	3.3235	0.0814	0.4749	3.0000	3.0000	3.0000	4.0000
Con4	34	0	2.6765	0.0917	0.5349	2.0000	2.0000	3.0000	3.0000
Con5	34	0	3.0294	0.0894	0.5214	2.0000	3.0000	3.0000	3.0000
Con6	34	0	2.6765	0.0917	0.5349	2.0000	2.0000	3.0000	3.0000
Con7	34	0	2.382	0.127	0.739	1.000	2.000	2.000	3.000
Con8	34	0	2.500	0.114	0.663	1.000	2.000	3.000	3.000
Con9	34	0	2.412	0.134	0.783	1.000	2.000	2.000	3.000
Con10	34	0	2.647	0.126	0.734	1.000	2.000	3.000	3.000
Con11	34	0	2.824	0.115	0.673	2.000	2.000	3.000	3.000
Con12	34	0	1.9118	0.0978	0.5704	1.0000	2.0000	2.0000	2.0000
Att1	34	0	3.2941	0.0899	0.5239	2.0000	3.0000	3.0000	4.0000
Att2	34	0	3.5000	0.0870	0.5075	3.0000	3.0000	3.5000	4.0000
Att3	34	0	3.5294	0.0966	0.5633	2.0000	3.0000	4.0000	4.0000
Att4	34	0	3.2941	0.0899	0.5239	2.0000	3.0000	3.0000	4.0000
Att5	34	0	3.0588	0.0724	0.4222	2.0000	3.0000	3.0000	3.0000
Att6	34	0	3.2941	0.0899	0.5239	2.0000	3.0000	3.0000	4.0000
Att7	34	0	2.4118	0.0955	0.5569	2.0000	2.0000	2.0000	3.0000
Att8	34	0	2.2059	0.0923	0.5382	1.0000	2.0000	2.0000	3.0000
Att9	34	0	2.206	0.132	0.770	1.000	2.000	2.000	3.000
Att10	34	0	2.265	0.136	0.790	1.000	2.000	2.000	3.000
Att11	34	0	2.147	0.113	0.657	1.000	2.000	2.000	2.250
Att12	34	0	2.500	0.135	0.788	1.000	2.000	2.500	3.000
Math1	34	0	2.971	0.155	0.904	1.000	2.000	3.000	4.000
Math2	34	0	2.941	0.152	0.886	1.000	2.000	3.000	4.000
Math3	34	0	3.235	0.127	0.741	1.000	3.000	3.000	4.000

Math4	34	0	3.412	0.127	0.743	1.000	3.000	4.000	4.000
Math5	34	0	2.235	0.112	0.654	1.000	2.000	2.000	3.000
Math6	34	0	2.618	0.140	0.817	1.000	2.000	3.000	3.000
Math7	34	0	2.059	0.133	0.776	1.000	1.750	2.000	3.000
Math8	34	0	2.265	0.122	0.710	1.000	2.000	2.000	3.000
Math9	34	0	2.000	0.119	0.696	1.000	2.000	2.000	2.000
Math10	34	0	2.294	0.137	0.799	1.000	2.000	2.000	3.000
Math11	34	0	1.882	0.110	0.640	1.000	1.000	2.000	2.000
Math12	34	0	1.9706	0.0989	0.5766	1.0000	2.0000	2.0000	2.0000

Use1	34	0	3.029	0.116	0.674	1.000	3.000	3.000	3.000
Use2	34	0	3.029	0.108	0.627	1.000	3.000	3.000	3.000
Use3	34	0	2.853	0.128	0.744	1.000	2.750	3.000	3.000
Use4	34	0	3.029	0.123	0.717	1.000	3.000	3.000	3.000
Use5	34	0	2.853	0.134	0.784	1.000	2.000	3.000	3.000
Use6	34	0	2.824	0.115	0.673	1.000	3.000	3.000	3.000
Use7	34	0	2.059	0.103	0.600	1.000	2.000	2.000	2.000
Use8	34	0	2.0882	0.0978	0.5704	1.0000	2.0000	2.0000	2.0000
Use9	34	0	2.412	0.120	0.701	1.000	2.000	2.000	3.000
Use10	34	0	1.912	0.107	0.621	1.000	1.750	2.000	2.000
Use11	34	0	2.000	0.119	0.696	1.000	2.000	2.000	2.000
Use12	34	0	2.618	0.120	0.697	1.000	2.000	3.000	3.000

Descriptive Statistics: Score

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Score	34	0	13.265	0.457	2.666	6.000	11.000	13.500	15.250

Variable	Maximum
Score	17.000

Tally for Discrete Variables: Descr

Descr	Count	Percent
LP	30	88.24
Poor	4	11.76
N=	34	

Tabulated statistics: AgeG, Con

Rows: AgeG Columns: Con

	A	D	All
17-18	5	1	6
19-20	17	3	20
21&ab	8	0	8
All	30	4	34

Pearson Chi-Square = 1.407, DF = 2
Likelihood Ratio Chi-Square = 2.315, DF = 2

Tabulated statistics: AgeG, Att

Rows: AgeG Columns: Att

	A	D	SA	All
17-18	6	0	0	6
19-20	18	0	2	20
21&ab	7	1	0	8
All	31	1	2	34

Pearson Chi-Square = 4.716, DF = 4
Likelihood Ratio Chi-Square = 5.081, DF = 4

Tabulated statistics: AgeG, Math
Rows: AgeG Columns: Math

	A	D	SA	SD	All
17-18	3	2	1	0	6
19-20	11	6	1	2	20
21&ab	3	5	0	0	8
All	17	13	2	2	34

Pearson Chi-Square = 5.058, DF = 6
Likelihood Ratio Chi-Square = 5.706, DF = 6

Tabulated statistics: AgeG, Use
Rows: AgeG Columns: Use

	A	D	SD	All
17-18	4	2	0	6
19-20	16	3	1	20
21&ab	7	1	0	8
All	27	6	1	34

Pearson Chi-Square = 1.926, DF = 4
Likelihood Ratio Chi-Square = 2.135, DF = 4

Tabulated statistics: AgeG, Overall
Rows: AgeG Columns: Overall

	A	D	All
17-18	5	1	6
19-20	17	3	20
21&ab	7	1	8
All	29	5	34

Pearson Chi-Square = 0.051, DF = 2
Likelihood Ratio Chi-Square = 0.052, DF = 2

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Tabulated statistics: AgeG, Descr
Rows: AgeG Columns: Descr

	LP	Poor	All
17-18	6	0	6
19-20	18	2	20
21&ab	6	2	8
All	30	4	34

Pearson Chi-Square = 2.210, DF = 2
Likelihood Ratio Chi-Square = 2.630, DF = 2

Tabulated statistics: Gender, Con
Rows: Gender Columns: Con

	A	D	All
Female	21	2	23
Male	9	2	11
All	30	4	34

Pearson Chi-Square = 0.645, DF = 1, P-Value = 0.422
Likelihood Ratio Chi-Square = 0.609, DF = 1, P-Value = 0.435

Tabulated statistics: Gender, Att
Rows: Gender Columns: Att

	A	D	SA	All
Female	21	1	1	23
Male	10	0	1	11
All	31	1	2	34

Pearson Chi-Square = 0.763, DF = 2
Likelihood Ratio Chi-Square = 1.048, DF = 2

Tabulated statistics: Gender, Math
Rows: Gender Columns: Math

	A	D	SA	SD	All
Female	14	7	0	2	23
Male	3	6	2	0	11
All	17	13	2	2	34

Pearson Chi-Square = 7.950, DF = 3
Likelihood Ratio Chi-Square = 9.017, DF = 3

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Tabulated statistics: Gender, Use
Rows: Gender Columns: Use

	A	D	SD	All
Female	19	4	0	23
Male	8	2	1	11
All	27	6	1	34

Pearson Chi-Square = 2.185, DF = 2
Likelihood Ratio Chi-Square = 2.352, DF = 2

Tabulated statistics: Gender, Overall
Rows: Gender Columns: Overall

	A	D	All
Female	20	3	23
Male	9	2	11
All	29	5	34

Pearson Chi-Square = 0.157, DF = 1, P-Value = 0.692
Likelihood Ratio Chi-Square = 0.152, DF = 1, P-Value = 0.696

Tabulated statistics: Gender, Descr
Rows: Gender Columns: Descr

	LP	Poor	All
Female	20	3	23
Male	10	1	11
All	30	4	34

Pearson Chi-Square = 0.112, DF = 1, P-Value = 0.738
Likelihood Ratio Chi-Square = 0.117, DF = 1, P-Value = 0.733

One-way ANOVA: Overall versus Age

Source	DF	SS	MS	F	P
Age	7	0.2281	0.0326	0.74	0.642
Error	26	1.1486	0.0442		
Total	33	1.3767			

S = 0.2102 R-Sq = 16.57% R-Sq(adj) = 0.00%

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Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	----------+---------+---------+---------+--
17	2	2.5938	0.0737	(-----------*-----------)
18	4	2.7031	0.2919	(--------*--------)
19	18	2.6528	0.1620	(---*---)
20	2	2.4063	0.6040	(-----------*-----------)
21	3	2.5625	0.0833	(---------*--------)
22	3	2.7778	0.1772	(---------*---------)
26	1	2.6042	*	(----------*----------)
28	1	2.5000	*	(----------*----------)

-------+---------+---------+---------+--
2.25 2.50 2.75 3.00

Pooled StDev = 0.2102

One-way ANOVA: Overall versus Gender

Source	DF	SS	MS	F	P
Gender	1	0.0061	0.0061	0.14	0.709
Error	32	1.3707	0.0428		
Total	33	1.3767			

S = 0.2070 R-Sq = 0.44% R-Sq(adj) = 0.00%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	---------+---------+---------+---------+
1	23	2.6286	0.1436	(----------*----------)
2	11	2.6572	0.3028	(----------*----------)

---------+---------+---------+---------+
2.590 2.660 2.730 2.800

Pooled StDev = 0.2070

One-way ANOVA: Score versus Age

Source	DF	SS	MS	F	P
Age	7	78.17	11.17	1.86	0.119
Error	26	156.44	6.02		
Total	33	234.62			

S = 2.453 R-Sq = 33.32% R-Sq(adj) = 15.37%

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Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	--------+---------+---------+---------+-
17	2	15.000	1.414	(------*------)
18	4	14.500	1.732	(----*----)
19	18	13.278	2.803	(--*-)
20	2	15.500	0.707	(------*------)
21	3	10.333	2.309	(-----*----)
22	3	11.333	0.577	(-----*----)
26	1	17.000	*	(---------*---------)
28	1	11.000	*	(---------*---------)

--------+---------+---------+---------+-
10.0 15.0 20.0 25.0

Pooled StDev = 2.453

One-way ANOVA: Score versus Gender

Source	DF	SS	MS	F	P
Gender	1	3.24	3.24	0.45	0.508
Error	32	231.38	7.23		
Total	33	234.62			

S = 2.689 R-Sq = 1.38% R-Sq(adj) = 0.00%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	--------+---------+---------+---------+-
1	23	13.478	2.626	(----------*----------)
2	11	12.818	2.822	(---------------*----------------)

--------+---------+---------+---------+-
12.0 13.0 14.0 15.0

Pooled StDev = 2.689

Prepared by:

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APPENDIX F

DOCUMENTATION

ISSN No:-2456-2165

ISSN No:-2456-2165

CURRICULUM VITAE

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PERSONAL BACKGROUND

Age : 29
Place of Birth : Caibiran, Biliran
Date of Birth : February 22, 1993
Citizenship : Filipino
Civil Status : Single
Gender : Female

EDUCATIONAL BACKGROUND

Graduate School : Master of Arts in Education
Major in Teaching Mathematics
Cebu Technological University (CTU) Main Campus
M.J. Cuenco Ave., Cebu City, Philippines
August 2021

College : Bachelor in Secondary Education
Major in Mathematics
Naval State University
P.I. Garcia, Naval, Biliran, Philippines
April 2017

High School : Manlabang National High School
Caibiran, Biliran
2005-2009

Primary :Caibiran Central School
Caibiran, Biliran
1999-2005

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WORK EXPERIENCE

College Instructor : School of Technology and Computer Studies
Biliran Province State University
P.I. Garcia Naval, Biliran
2016 - Present

SEMINARS AND TRAINING ATTENDED

- A Forum on Higher Education Future 2021
  University of the Philippines
  June 25, 2021

- Basic Statistical Tools and Techniques in Research
  University of the Philippines
  November 25, 2022

- Practical Guides to Distance Learning
  Google for Education
  July 2, 2020

- Flipping your Math Classroom: Blended Learning in the New Normal
  Google for Education
  June 12, 2020

- Regional Seminar Workshop on Teaching Strategies in the 21st Century
  November 7-9, 2019