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TEACHERS' MOTIVATIONAL STRATEGY AND ITS RELATION TO ACADEMIC ACHIEVEMENT OF STUDENTS-AT-RISK

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ABSTRACT

This research aimed to investigate the correlation between teachers' motivational strategies and the academic achievement of students-at-risk at Bambang National High School, Bambang I District. The study utilized adapted questionnaires that underwent expert validation and reliability analysis. A quantitative research design, specifically the descriptive-correlational method, was employed. The sample comprised 30 Grade 10 students-at-risk and 24 school personnel. The findings revealed that teachers employed satisfactory motivational learning strategies, indicating room for improvement. Teachers are encouraged to explore additional strategies to better motivate students-at-risk and enhance their academic performance. Furthermore, the students-at-risk demonstrated fairly satisfactory academic achievement, although a considerable number failed to meet academic expectations. The study also found no significant relationship between teachers' motivational strategies and students-at-risk academic achievement. Therefore, the academic performance of students-at-risk may be further enhanced through the integration of instructional technology.

Keywords: academic achievement, instructional technology, motivational strategies, students-at-risk

INTRODUCTION

Educational institutions focus their whole teaching and learning process on helping students at risk succeed in both their academic and extracurricular endeavors. Academic success must be of higher importance, and students, instructors, and parents must all work to make it a reality (Verma, 2016). The act of completing anything that has been successfully started, notably via skill, practice, or preference, is known as achievement.

According to Hornstra et al. (2015), some students are at risk of dropping out due to low academic achievement. To address this, teachers play a critical role in shaping the learning environment. One of their key responsibilities is to inspire students, particularly those at risk, to engage with their studies. Teachers' efforts to motivate these students can vary, as each educator has their own set of strategies. A teacher need only establish objectives that prioritize task mastery over task performance.

For students at risk, the focus should be on learning how to learn, rather than on outperforming their peers. This shift from a performance-oriented goal to a mastery-oriented goal is essential. Teachers must set objectives that aim to help at-risk students develop their skills, rather than merely measuring their current abilities. In order for these students to succeed academically, the motivational strategies employed by teachers in the classroom are important.

The majority of teachers recognize that inspiring their learners especially the students at risk is a component of their profession. Learners may, or may be expected to, arrive in particular pedagogical situations with such high levels of initial motivation that the teacher's attention is solely on maximizing the efficiency of the learning processes. On the other hand, in some pedagogical contexts, students are required to attend and the teacher's primary responsibility is to persuade them to participate in learning activities (Lamb, et al., 2019).

It cannot be denied that the students' motivation, particularly the students at risk to learn is influenced by teachers' level of enthusiasm in what they are teaching. The attitudes and importance that teachers assign to their teaching style are typically positive and passionate (Schiefele & Schaffner, 2015; Zhang, 2014).

The teachers' motivational strategy in encouraging the students' at-risk include instructional technology like using computer or laptop in class, using power point presentation in everyday discussion, distributing activity sheets, prototype, integrating games in class, presenting videos or movies related to lessons, and other motivating activities related to instructional technology.

At Bambang National High School, the researcher observed various sentiments expressed by students. Therefore, this study aimed to examine the motivational strategies employed by teachers and their impact on the academic performance of at-risk students. The findings were used to develop technology-based materials intended to enhance students' academic achievement and address the motivational challenges they face.

STATEMENT OF THE PROBLEMS

This study aimed to determine the extent to which teachers at Bambang National High School implement motivational strategies in teaching students at risk, as assessed by department heads, the teachers themselves, and the students. It also sought to explore the relationship between these strategies and the academic achievement of at-risk students.

Specifically, the study addressed the following research questions:

1. What is the assessment of the three groups of respondents on the teachers' motivational strategies in terms of creating classroom environment, increasing learners goal orientation, making the learning task stimulating, promoting collaboration, and promoting learner autonomy?
2. How are the students-at-risk categorized according to their academic achievement level?
3. Is there a significant relationship between the teachers' motivational strategies and students-at-risk's academic achievement?

RESEARCH METHODOLOGY

The study employed a quantitative research design to describe the teachers' motivational strategies and the academic achievement of at-risk Grade 10 students at Bambang National High School, Bambang, Nueva Vizcaya, for the academic year 2023-2024.

The study utilized a descriptive-correlational technique, wherein the researcher collected data without altering the subject of examination. The key characteristic of studies employing the descriptive-correlational method is that they refrain from making any direct changes to the study's environment. Descriptive-correlational was used to unveil if teachers' motivational strategies and the academic achievement of at-risk Grade 10 students are correlated with each other.

Additionally, descriptive-correlational research can be conducted in various formats, each implementing the method in a slightly different way. Descriptive research typically relies on surveys and other data collection methods that use pre-existing data (Writer, 2020).

The study was conducted at Bambang National High School (BNHS), located in Bambang, Nueva Vizcaya. This school is one of the public secondary schools in the Schools Division of Nueva Vizcaya.

There were two (2) groups of respondents involved in this study-the first study group consisted of thirty (30) students-at-risk from Bambang National High School. These students were selected from twelve Grade 10 sections. Students-at-risk were defined as those who had incurred consecutive absences, were frequently tardy, and were at risk of dropping out. The selection criteria for these respondents included: (1) current enrollment at the school for SY 2022-2023; (2) being a bona fide Grade 10 student; (3) official enrollment in Grade 10; and (4) willingness to participate in the study. The respondents were composed of 30 males and females, aged 14-17. Informed consent was obtained from all respondents before the actual data gathering.

The second group consisted of twenty-four (24) individuals, including eight (8) department heads and sixteen (16) Grade 10 teachers. All respondents were selected using purposive sampling.

The researcher utilized a survey questionnaire as a primary tool for gathering data.

Questionnaire on Teachers' Motivational Strategies. This measured the motivational strategy used by the teachers in teaching their students. This was adapted from He (2009). The motivational strategies include creating a conducive classroom environment, increasing learners' goal-orientation, making the learning tasks stimulating, promoting collaboration, and promoting learner autonomy.

The respondents were offered four (4) options from which to choose to indicate the frequency in the use of motivational strategies using the scale that follows:

Scale	Qualitative Description	Range	Qualitative Description
4	Always	3.50-4.00	Very Satisfactory
3	Often	2.50-3.49	Satisfactory
2	Sometimes	1.50-2.49	Fair
1	Never	1.00-1.49	Poor

Academic Achievement. This was used to determine the academic performance of the respondents based on their grades for the first quarter as reflected in the School Form 9 of the Department of Education.

Grading Scale	Descriptive Interpretation
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
75-79	Fairly Satisfactory
Below 75	Did Not Meet Expectations

The study made used the following statistical tools n order to arrive at the most appropriate interpretations and analyses of the data.

Frequency and Percentage. These were used to categorize/classify students-at-risk in terms of their academic achievement.

Mean. This statistical tool was utilized to assess the teachers' motivational strategies and academic achievement of the students-at-risk.

Pearson Product-Moment Correlation Coefficient. This was employed to establish the relationship existing between the teachers' motivational strategy and the academic achievement of the respondents.

All inferences were based using the five percent (5%) level of significance.

FINDINGS

This section serves as the culmination of meticulous data collection, analysis, and interpretation. This presents the results and discussion of the findings to the questions posted.

Problem 1. What is the assessment of the three groups of respondents on the teachers' motivational strategies in terms of creating classroom environment, increasing learners goal orientation, making the learning task stimulating, promoting collaboration, and promoting learner autonomy?

To answer this question, the responses from three groups of respondents—school heads, department heads, and teachers—were analyzed. Each group's responses to the indicators under the five (5) motivational strategies of teachers were used to calculate the weighted mean.

The weighted means determined the sub-mean for each motivational strategy, which served as the basis for calculating the overall mean for each of the three groups of respondents. Subsequently, the grand mean of the motivational strategies was computed.

Table 1. Grade 10 Teachers' Motivational Strategy as Perceived by Department Heads, Teachers, and Students

Components	Mean and Qualitative Description			Overall Mean
	Department Heads	Teachers	Students	QD
Creating classroom environment	2.80 Satisfactory	3.33 Satisfactory	3.03 Satisfactory	3.05 Satisfactory
Increasing learners goal orientation	3.00 Satisfactory	3.45 Satisfactory	3.13 Satisfactory	3.19 Satisfactory
Making the learning task stimulating	2.73 Satisfactory	3.18 Satisfactory	2.94 Satisfactory	2.95 Satisfactory
Promoting collaboration	2.93 Satisfactory	3.48 Satisfactory	3.11 Satisfactory	3.17 Satisfactory
Promoting learner autonomy	3.13 Satisfactory	3.33 Satisfactory	3.16 Satisfactory	3.21 Satisfactory
Overall Mean	**2.92 Satisfactory**	**3.35 Satisfactory**	**3.07 Satisfactory**	**3.11 Satisfactory**

Creating Classroom Environment. It can be gleaned from table 1 that the teachers gave the highest assessment on creating classroom environment with a mean of 3.33, followed by the students with 3.03, and department heads with 2.80. This means differ numerically, the means differ but are all qualitatively described as "satisfactory."

To go into the details, the teachers themselves claim that they always make sure that their classes have conducive learning environment described qualitatively as "very satisfactory" and "satisfactory" since they often bring and encourage humor in class using technology, create a supportive classroom management so students take risks in using technology. They often use short and interesting opening activities, like games to start each class using technology and set the mood of the students before proceeding to the lesson proper. The teachers claim that they often practice the aforementioned indicators.

On the other hand, the students evaluated teachers' making sure that the classes have conducive learning environment as "very satisfactory"; "fair" along teachers bringing and encouraging humor in class using technology and setting the mood of the students before starting the lesson proper; and "satisfactory" in terms of teachers creating a supportive classroom management so students will take risks using technology.

Overall, the respondents' assessment of teachers' motivational strategies is "satisfactory" as marked by the overall mean of 3.05. This means they always in make sure that the classes have conducive learning environment and "satisfactory" along bringing and encouraging humor; creating supportive classroom environment; using short and interesting opening activities; and setting the mood of students at the start of the lesson proper. The overall mean of 3.05 indicates "satisfactory" assessment of teachers' conducive classroom environment.

Across the various indicators, department heads consistently assign the lowest mean score of 2.80; but still qualitatively described as satisfactory. This indicates that the department heads concur with the students and teachers that they latter satisfactorily create a wholesome and warm classroom environment, although at a lower level.

The results further indicate the varying perceptions among the three sets of respondents regarding the motivational strategies of Grade 10 teachers. Overall teachers consistently view their efforts more positively compared to the students and department heads' perceptions albeit the fact that their perception levels are all qualitatively described as satisfactory. For instance, they may perceive a need for further enhancement in creating a stimulating learning task environment, despite an overall positive outlook. This suggests that there might be discrepancies in the implementation or effectiveness of motivational strategies across classrooms, highlighting the need for consistency and targeted professional development initiatives. While teachers generally aim to make learning tasks engaging, there may be room for improvement in ensuring consistent implementation across classrooms. This indicates a level of self-awareness regarding areas for potential growth in their motivational practices. Overall, these findings underscore the importance of aligning perceptions among educational stakeholders and highlight areas for targeted professional development initiatives aimed at enhancing motivational strategies within the Grade 10 educational context.

Relative to this finding, Parsons (2017) posited that the physical layout of the classroom has an essential part in learner enhancement. However, their learning environment is not confined to the layout and facilities of the classroom. It also encompasses teachers' relationships with their students. Literature

suggests that students are more engaged in a supportive learning environment wherein teachers show them respect and appreciation for whatever they accomplish.

Increasing Learners' Goal Orientation. Table 1 also reflects that the motivational strategy along increasing learners' goal orientation was assessed as "satisfactory." This is indicated by the means of 3.00, 3.45, and 3.13 of the department heads, the teachers themselves, and the students respectively with the teachers' assessment being the highest and that of the department heads, being the lowest. Nevertheless, the means given by the three (3) groups of respondents are all qualitatively described as "satisfactory."

Taking the groups individually, the department heads perceive that the teachers are encouraged to set personal learning goals in classes, thus assessing them as "very satisfactory" but "satisfactory" in teachers helping them to develop realistic goals about learning using technology; teachers finding students' needs and building them into meaningful course using technology; and teachers helping them to realize the importance of technology. However, the department heads evaluated their teachers "fair" in teachers presenting videos to motivate their students to attain higher dreams in life.

Additionally, the students rated the teachers very satisfactory along giving encouragement in settling learning goals; finding out students' needs and building them up; and helping in realizing the importance of technology in education. Meanwhile, they rated the teachers "satisfactory" along teachers helping them to develop realistic goals about learning with the use of technology and presenting encouraging videos to motivate them towards achievement of their dreams in life.

The teachers rated themselves, very satisfactory along being of help in realizing the importance of technology in education. The rest of the indicators were assessed as "satisfactory "; that is they help in developing realistic goals about learning using technology; in encouraging the setting of personal goals; finding student needs and building upon them; and presenting encouraging videos to motivate students and themselves to attain their dreams in life.

In a nutshell, teachers motivational strategy in terms of learners' goal orientation was assessed as "satisfactory" as evidenced by overall mean of 3.19.

It could be inferred that while the teachers' assessment of their motivational strategies is satisfactory there is still very much to be done, specifically in learners' goal orientation. Students' motivation to learn and achieve in his academic journey starts with setting his goals and this they can do if their teacher directs them to desirable, realistic and achievable goals. Orienting students to their goals is even more important today, as the educational landscape has dramatically changed with the advent of advanced technology.

On this note, Studyo (2021) expounded that most human behavior is guided by attaining goals and fulfilling needs. Goals can range from personal to professional, from short-term to long-term and so on. They may also be objective and physical, or subjective and psychological. These goals maybe driven by various factors based on every person, such as the desire to learn or to perform better, or a combination of the two. But the factor that affects student learning most is motivation. Goal orientation impacts motivation, which in itself impacts learning. Teachers and the way they deliver lessons can also affect student motivation in ways that either facilitate or hinder learning.

Making The Learning Task Stimulating. Table 1 also displays the assessment of teachers' motivational strategy, along is making learning tasks stimulating, by the three groups of respondents.

The department heads assessed this motivational strategy of teachers as "satisfactory" as indicated by the mean of 2.73. This could be interpreted to mean that they often observe that the teachers introduce meaningful and interesting topics using technology, such as videos; break the routine by varying presentation format with the use of technology like power point presentation and short videos; make tasks challenging by using power point presentation; make the learning tasks stimulating by using games and other interesting activities; but sometimes give interesting and motivating activities like power point presentation and games such as 4-pics- one word, with the qualitative description of "fair."

Similarly, the teachers themselves evaluated this motivational strategy along making the learning task stimulating with a mean of 3.18, qualitatively described as " satisfactory." This finding implies that the teachers introduce meaningful and interesting topics making use of technology; break the routine by presenting their lessons in different ways; make tasks more challenging through the use of power point presentation; give interesting and motivating activities using various technology platforms; and make the learning tasks stimulating by using guessing games.

In like manner the students rated the teachers with a mean of 2.94 described qualitatively as "satisfactory." They concurred that their teachers practice the aforementioned indicators although their mean assessment utilizing technology; making variations in presenting lesson to break the routine; giving challenging tasks; and interesting motivating activities; and making learning tasks stimulating.

It can be construed from these finding that the respondents are cognizant of the fact that effective learning among students' spring from the teachers' ability to create an invigorating and inspiring classroom environment. They are fully aware that beyond the physical set-up of the classroom and the visuals they see around them, teachers have to model enthusiasm and eagerness to learn. Teachers should have the ingenuity to design learning tasks and activities that eliminate boredom among the students; rather arouse or stir their interests and curiosity. In doing so, students will always look forward to attending their classes and participating actively in classroom activities.

Yet the satisfactory rating of the teachers in this particular motivational strategy implies that the teachers and their department heads and students should not settle for this performance. There is much room for improvement along this aspect because it is a teacher function that is expected to be delivered every day in their classes.

Relevant to these statements, Wiesner-Groff (2023) posted that a stimulating classroom environment has benefits in terms of engaging students in the instructional process and upgrading their educational experiences. A stimulated classroom environment is a combination of the way the classroom is set up, the way students interact with their work and one another, and the way the teacher delivers his day-to-day lessons. Simply put stimulation in learning pertains to the manner in which the students' minds are stirred while they are in the classroom.

Promoting Collaboration. Another motivational strategy of teachers is promoting collaboration. This was assessed by the three sets of respondents as "satisfactory" as testified by the overall mean of the three groups of respondents of 3.17. For the specifics, the department heads rated the teachers with a mean of 2.93 qualitatively described "satisfactory". They perceived that the teachers encourage students to suggest attainable class rules; often ask students to work toward the same developmental goals; encourage students to share personal experiences and thoughts in their technology subject; motivate the students to collaborate with others in the class; and often give activities that improve unity among the students.

Contrastingly, the teachers noted that they always encourage students to suggest attainable class rules; always motivate students to promote collaboration in class; and always give students activities that enhance unity, all qualitatively described as "very satisfactory" with a mean of 3.48. Notwithstanding, the teachers perceived that they often encouraged students towards common development goals and to share personal experiences in technology, with "satisfactory" as the qualitative description. The teachers rated this motivational strategy, taken as one as "satisfactory" as attested by the overall mean of 3.17.

On the flipside, the students rated their teachers with an overall mean of 3.11, described qualitatively as "satisfactory." They claimed that their teachers often encourage students to suggest attainable rules in class; to work toward the attainment of common goals; to share personal experiences and ideas related to technology; to promote collaboration; and provide learning tasks that promote unity among the students.

Taking the assessment of the three groups of respondents as one, the overall mean was pegged at 3.17 with the qualitative description of "satisfactory." This implies that respondents are one in their perceptions that the teachers manifest "satisfactory" level in the assessment of promoting collaboration as a motivational strategy.

It can be inferred that the three sets of respondents are in the agreement that promoting collaboration in the classroom is a strategy that motivates students learning. They are aware that the learning is interactive, that is, students learn better and easier if they interact or cooperate with the teacher and their classmates. When students work together to reach a common goal, they also learn social skills and values. They learn to listen to the ideas and respect the opinions of others.

The "satisfactory" assessment of this teacher's motivational strategy along promoting collaboration gives the impression that the teachers are on the right track towards promoting collaboration among the students. Nonetheless they should not "rest on their laurels," so to speak; rather they should exert more effort in instilling in the students the spirit of collaboration and cooperation in learning.

Webb (2019) defined collaborative or cooperative learning as an approach that involves students working together on activities or learning tasks in a group that is small enough so that everyone can par-

ticipate. Students in the group may work on separate tasks which contribute to a common overall result, or work together on a shared task.

Webb (2019) further discussed that the impact of collaborative approaches on learning is consistently positive as evidenced by additional five (5) months progress, on the average, in an academic year. But the size of impact differs so it is necessary to get the right details. She cautioned, however that collaborative learning can have numerous varied approaches, but effective collaborative learning necessitates much more than just letting students sit together and instructing them to work in pairs or group; structured approaches combined with well- designed or planned activities results in greater learning gains.

Promoting Learner Autonomy. The last motivational strategy of teachers considered in this study is promoting learner autonomy. Table 2 reflects that the department heads assessed teachers' motivational strategy along promoting learning autonomy as "satisfactory" as indicated by the overall mean of 3.13. This could be interpreted to mean that the department heads always observe the teachers clearly explaining to the students how and when they will be graded using power point presentations, qualitatively described as "very satisfactory." They rated the teachers "satisfactory" in encouraging learning in small groups; encouraging students to realize or recognize and minimize their own mistakes; giving activities that promote self-independence in class; and developing independence among learners, especially in the use of television, computer, or laptop.

In a similar way the teachers rated themselves in this strategy "satisfactory," as marked by the mean of 3.33. This suggests that the teachers gave themselves higher in all indicators in the assessment on promoting learner autonomy than the ratings given by the parents and students. However, despite the higher mean score, the teachers' assessment of this motivational strategy is still qualitatively described as "satisfactory."

In a similar way, the students rated their teachers in this strategy "satisfactory," as marked by the mean of 3.16. This suggests that the students' rating although higher than the department heads and lower than teachers still have the same perception level of the motivating strategy along promoting learner autonomy. They believe that their teachers give them activities that encourage or challenge them to do their tasks as independently as possible.

Putting the assessment of the three sets of respondents together, promoting learner autonomy as a motivational strategy obtained an overall mean of 3.21. This could be interpreted to mean that teachers have "satisfactory" rating in promoting self-independence among the learners.

It can be construed that the teachers use this strategy to inculcate among the learners the importance of being independent in the accomplishment of their school tasks; why they should take control and responsibility for their own learning-what they learn and how they learn it. Students cannot become independent if the teachers fail to teach them how to become. The satisfactory rating of the teachers in this aspect reflects their efforts in producing learners who can learn independently, but at the same time, it connotes that they must strive harder, to take more struggles in establishing and sustaining students' autonomy in learning.

In this connection, Hardy-Gould (2014) contended that learner autonomy takes as its starting point the idea that students are capable to develop an independent, proactive approach to their studies. In higher education, autonomy is specifically essential. Students may have limited classroom contact time for learning but they may need to quickly upgrade their knowledge and skills. It is therefore critical for them to become self-reliant learners who can continue learning efficiently within the four walls of the classroom.

Succinctly, the five (5) motivational strategies assessed in the study were evaluated as satisfactory with a grand mean of 3.11 – 2.92 from the department heads; 3.35 from the teachers and 3.07 from the students. This "satisfactory" assessment is a big stride in their quest for effective motivational strategies for learning. Having started right with the application of these five motivational strategies, teachers with the support of their department heads as well as the students may continue harnessing or strengthening these strategies, until they reach the optimum level of implementation, or better yet explore other motivational strategies to achieve their goal of developing students holistically and becoming productive contributors to nation building.

The bottom line is that every student has unique potentials to achieve academic and life successes, all he needs is the motivation, inspiration, and encouragement to pursue his goals and do so the best way possible.

Problem 2. How are the students-at-risk categorized according to their academic achievement level?

To answer this question, the grades for the first quarter of the students-at-risk were accessed from the School Form 9 of the DepEd. Results are presented in table 2.

Table 2. Frequency and Percentage of Students-at-Risk Based on Their Academic Achievement Test

Qualitative Description	Grade	Frequency	Percentage
Outstanding	90 – 100	0	0
Very Satisfactory	85 – 89	3	10.00
Satisfactory	80 – 84	7	23.33
Fairly Satisfactory	75 – 79	8	26.67
Did Not Meet Expectations	0 – 74	12	40.00
Overall Mean			76.77
Qualitative Description			Fairly Satisfactory

As reflected in table 2, the overall mean of the students-at-risk's academic achievement is pegged at 76.77, qualitatively described as fairly satisfactory. This was obtained by eight (8) or 26.67% students-at-risk whose grades fall within 75-79 range. It is sad to note, however, that a greater number of students-at-risk comprised of 12 or 40% of the 30 cases, failed to meet the expectations of DepEd since they belong to the 0-74 grade range.

The findings show that there are fewer students-at-risk who achieved higher grades, with 7 or 23.33 % individuals falling within the range of 80 to 84, categorized as "satisfactory," and only 3 or 10% individuals achieving grades within the range of 85 to 89, categorized as "very satisfactory." These findings suggest that while some students-at-risk demonstrate improvement in their academic performance, there is still a notable gap between their achievement levels and those of their peers.

To recall, a student-at-risk is a student who is at risk of not meeting academic or social expectations, or one who is at risk of not graduating from high school. Some students who may be regarded at risk are those with academic difficulties or who are performing poorly in school and those who have experienced trauma or who have unstable home environments (Addis et al., 2020); those from low income families or are facing financial challenges (Horton, 2015); those with learning and physical disabilities (Gil, 2021); those who are struggling with social or emotional issues (Horton, 2015); students who are English language learners or who come from non-English speaking households (Barrington, 2022).

It is important to note that students-at-risk come from diverse backgrounds, so they have a wide range of needs, distinct from one another that may require extra support and resources to be academically successful. This is where teachers come into the picture.

Overall, the data highlight the importance of addressing the academic needs of students-at-risk and implementing targeted interventions to support their learning and improve their academic outcomes. By identifying areas of weakness and providing tailored support, educators can help students-at-risk overcome academic challenges and achieve greater success in their educational endeavors.

The findings imply several important considerations regarding students-at-risk and their academic achievement. Firstly, the data accentuate the prevalence of academic struggles among students-at-risk, as evidenced by the majority falling within the lowest grade category of "Did Not Meet Expectations." This suggests that there is a significant population of students facing challenges in meeting academic standards and may require additional support to improve their performance.

Furthermore, the distribution of grades across different categories indicates varying levels of achievement among students-at-risk. While some show modest progress, with grades categorized as "fairly satisfactory" or "satisfactory," there remains a notable gap between their achievement levels and those of their peers. This underscores the ongoing need for targeted interventions to address the specific needs of students-at-risk and help them achieve academic success.

Moreover, the absence of students-at-risk achieving the highest-grade category of "outstanding" suggests that there may be systemic barriers or challenges hindering their ability to excel academically. This amplifies the importance of identifying and addressing factors contributing to academic underperformance among students-at-risk, such as socioeconomic disparities, learning disabilities, or lack of access to resources and support services.

In summary, the findings stress the critical importance of providing comprehensive support and intervention strategies to help students-at-risk overcome academic challenges and reach their full potential. By addressing the unique needs of these students and implementing targeted interventions, educators can promote equity and inclusivity within the educational system and ensure that all students have the opportunity to succeed academically.

The quality of education in universities is often evaluated based on students' academic performance, which serves as a key indicator (Lawrence, 2013, as cited in Jafari et al., 2019). Despite efforts to address the needs of at-risk students at the school level, interventions remain overly broad and frequently ineffective, given the broad scope of the term "at risk" (Cooper, 2015). To effectively support at-risk students and enhance their academic achievement, educators must develop a deeper understanding of this demographic, including specific risk factors and the interconnectedness among them. For instance, research indicates that sibling influence plays a role in the educational outcomes of at-risk students, as actions and risk factors affecting one sibling can impact others within the same household (McDevitt et al., 2013).

Problem 3. Is there a significant relationship between teachers' motivational strategies and students-at-risk's academic achievement?

To come up with the answer to this problem, the Pearson-r (Pearson Product Moment Correlation Coefficient) was run, the result of which is presented in table 3.

Table 3. Analysis of Relationship between Teachers' Motivational Skills and Students' Academic Achievement

Variables Correlated	*r*-value	*p*-value	Qualitative Description	Decision
Teachers' Motivational Strategies and Academic Achievement of Students-at-Risk	0.15	0.42	Not Significant	Accept Null Hypothesis

It appears in table 3 that teachers' motivational strategies have no significant relationship with the academic achievement of students-at-risk. This is evidenced by the computed r-value of 0.15 with the p-value of 0.42, which is much higher than the significance level of 0.05. This led to the acceptance of the null hypothesis that there is no significant relationship between the teachers' motivational strategies and the students-at-risk's academic achievement.

The findings suggest that there is no statistically significant correlational relationship between the teachers' motivational strategies and the academic achievement of students-at-risk. The r-value of 0.15 indicates a weak positive correlation, implying that as the teachers' motivational strategies gets higher, there can be a slight increase in the academic achievement among students-at-risk, but this relationship lacks statistical significance. Furthermore, with a p-value of 0.42 exceeding the conventional threshold of 0.05 for statistical significance, the observed correlation is deemed not statistically meaningful. Therefore, the null hypothesis is accepted, indicating that there is no notable relationship between the evaluation of the three sets of respondents, their teachers' motivational strategies and the academic achievement of students-at-risk. This suggests that there are factors beyond teachers' motivational strategies that play a more significant role in determining academic outcomes among students-at-risk.

The findings imply that the evaluation of the teachers' motivational strategies is directly correlated with the academic achievement of students-at-risk. Despite a weak positive correlation observed, the lack of statistical significance suggests that other factors may have a more substantial influence on the academic performance of students-at-risk such as socio-economic status, mental and emotional attributes, family relationships, peer interaction, and teacher related factors. It can be construed that while teachers' motivational strategies are important for fostering a positive learning environment, they are not be the sole determinants of academic success for students-at-risk. Therefore, educators and policymakers should consider a holistic approach to supporting these students, addressing various factors such as socio-economic background, individual learning needs, and access to resources, alongside motivational strategies, to effectively enhance their academic achievement.

Further, the findings suggest that while teachers' motivational skills are important, they are not the primary determinant of academic achievement among students at risk. It underscores the complexity of

factors influencing educational outcomes in this population and highlights the need for further research to better understand the multifaceted nature of student success in challenging academic contexts. Moreover, the implications suggest that interventions aimed at improving academic achievement among students at risk should consider a holistic approach that addresses various factors beyond teachers' motivational skills.

The lack of significant correlation between teachers' motivational strategies and the academic achievement of students-at-risk, warrants a multifaceted approach. Firstly, educational institutions should diversify support systems tailored to the specific needs of students-at-risk. This could involve implementing additional academic support mechanisms such as tutoring programs, mentoring initiatives, and counseling services aimed at addressing individual learning challenges and promoting academic growth. By offering comprehensive support beyond motivational strategies, schools can better address the diverse needs of students-at-risk and enhance their overall academic success.

Secondly, ongoing professional development opportunities should be provided for teachers to enhance their understanding and implementation of effective instructional strategies tailored to support students-at-risk. This may include training in differentiated instruction, culturally responsive teaching practices, and trauma-informed pedagogy. By equipping educators with the necessary skills and resources to effectively support students-at-risk, schools can create a more inclusive and supportive learning environment conducive to academic achievement.

Additionally, collaborative support networks should be fostered among teachers, counselors, administrators, and community stakeholders to develop holistic support plans for students-at-risk. By working together to share best practices, resources, and strategies, educational stakeholders can better address the diverse needs of students-at-risk and create a comprehensive support system that promotes academic success. Furthermore, the integration of instructional technology tools and resources designed to cater to diverse learning styles and provide personalized learning experiences can further enhance engagement and support academic growth among students-at-risk. Through these concerted efforts, educational institutions can address the findings and effectively support the academic achievement of students-at-risk.

Relative to these discussions, Pak (2015) conducted a study for the purpose of exploring and describing the school factors experienced by students at an alternate high school with an independent study program and a 90%. CASHEE passage rate and identifying those factors that students perceived as contributing to their improved academic performance. The school factors included: the nature and quality of the school learning environment, learning experiences, program interventions, and independent study program. The research study examined 17 high-performing at-risk students' perception of academic achievement and success within a charter school environment that used an independent study format. The findings of the study led to the conclusion that successful alternative high school students perceived teachers as the most important school factor influencing their academic performance.

Specifically, teachers influenced student academic performance through caring supportive relationships. A physically and emotionally safe learning environment was found essential to feel comfortable and able to concentrate on their academics. Extracurricular activities such as sports and student council help build student retention and motivation in school, and providing students with the guidance, opportunity, and support necessary to allow them to take charge of their own education and learning that help them to be more responsible and successful.

CONCLUSIONS

Premised on the significant findings of this study, the following conclusions were drawn:

1. The teachers exhibit satisfactory motivational learning strategies, which implies that they should not settle for this level. Instead, they should continue to improve upon the motivational strategies discussed in this study and explore additional strategies to better motivate students-at-risk to perform academically.
2. The students-at-risk demonstrate fairly satisfactory academic achievement, with a significant number failing to meet expectations.
3. Teachers' motivational strategies do not show a significant relationship with the academic achievement of students-at-risk.

RECOMMENDATIONS

Taking into consideration the aforementioned significant findings and conclusions of this study, the researcher offers the following recommendations:

1. Teachers, in general, and teachers of at-risk students, in particular, may consider pursuing higher levels of education and attending relevant training on pedagogy to better understand and update their knowledge of motivation, which may help prevent the occurrence of students dropping out of school.
2. Teachers and school officials may explore ways to help students at risk develop the competencies prescribed in their subjects or grade levels.
3. Teachers may seek to understand what factors, in addition to motivational strategies, may influence students' learning, such as those related to the school, family, or factors originating from the students themselves.
4. This research may be replicated, with other variables not included in this study, such as demographic profile, emotional quotient, social skills, and other psychological factors, potentially being considered.

REFERENCES

Addis, D., Edwards, J., Green, L., & Harris, T. (2020). National Dropout Center. 21.

Barrington, K. (2022). What is the impact of high school graduation rates? Public School Review. https://www.publicschoolreview

Creswell, J., & Creswell, D. (2020). Research Design**:** Qualitative, Quantitative, and Mixed Methods Approaches. *Education Reseach*, *42*, 159–171.

Campbell, S. (2020). Purposive sampling:complex or simple?. *Journal of Research in Nursing*, *64*, 100810. https://doi.org/10.1016/j.stueduc.2019.100810

Cooper, C. (2015). Students at risk: The impacts of self-efficacy and risk factors on academic achievement. Published dissertation. University of Texas at Arlington. https://rc.library.uta.edu/uta-ir/bitstream/handle/10106/25440/COOPER-DISSERTATION-2015.pdf?sequence=1&isAllowed=y

Hardy-Gould, S. (2014). Systematic review of the check-in, check-out intervention for students at risk for emotional and behavioral disorders. *Education & Treatment of Children*, *37*(4), 635–658.

Hornstra, L., Mansfield, C., van der Veen, I., et al. (2015). Motivational teacher strategies: The role of beliefs and contextual factors. *Learning Environments Research*, *18*, 363–392. https://doi.org/10.1007/s10984-015-9189-y

Horton, J. (2015). Identifying risk factors that affect college student success. 7(1).

Gil, A. (2021). Students succeed in the response to every academic crisis holistically (REACH) program: A positive education journey for students at risk.

Jafari, H., Aghaei, A., & Khatony, A. (2019). Relationship between study habits and academic achievement in students of medical sciences in Kermanshah-Iran. Advances in Medical Education and Practice, 10, 637–643. https://doi.org/10.2147/AMEP.S208874

Lamb. D., et al. (2019). Relationship between study habits and academic achievement in students of medical sciences in Kermanshah-Iran. *Advances in Medical Education and Practice*, *10*, 637–643. https://doi.org/10.2147/AMEP.S208874

Lawrence, A., & Hanitha, T. (2017). A study on teachers' motivational strategy and academic achievement of higher secondary students. Aarhat Multidisciplinary International Education Research Journal (AMIERJ), 6(Special Issue No. I).

McDevitt, T. M., Ormrod, J. E., Cupit, G., Chandler, M., & Aloa, V. (2013). Child Development and Education. Pearson.

Pak, C. (2015). A study of high performing at-risk high school students and their perceptions on academic success and achievement.Theses and Dissertations, 649. https://digitalcommons, pepperdine.edu/649

Parsons, C. (2017). Reforming the environment: The influence of roundtable classroom design on interactive learning. *Journal of Learning Spaces*, *6*(3).

Schiefele, U., & Schaffner, E. (2015). Teacher interests, mastery goals, and self-efficacy aspredictors of instructional practices and student motivation. ScienceDirect, 42, 159-171.

Studyo (2021). Student goal orientation, motivation and learning, https://studyo.com>blog
Verma, A. (2016). A Study of academic achievement among high school students in relation to their study habits. *International Journal of Research in Humanities, Arts and Literature*, 4 (3), 75-88.
Webb, N. (2019).The teacher's role in promoting collaborative dialogue in the classroom. British Journal of Educational Psychology, 79.
Wiesner-Groff, W. (2023). Creating a stimulating classroom environment: Definition and strategies. https://study.com>lesson>creating...
Writer, S. (2020). What is descriptive correlational method? https://www.reference.com/world-view/descriptive-correlational-method-c9155e5383f0590f
Zhang, Q. (2014, February 14). Assessing the effects of the instructor enthusiasm on classroom engagement, learning goal orientation, and academic self-efficacy. Communication Teacher, 28(1), 44-56. doi:10.1080/17404622.2013.839047

IMPROVING LEAST MASTERED COMPETENCY IN MATHEMATICS USING INDIGENIZED LEARNING ACTIVITY SHEETS FOR GRADE 6 PUPILS

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ABSTRACT

The study aimed to improve the least mastered competency in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools in Mathematics using indigenized learning activity sheets for Grade 6 pupils at Tactac Elementary School for the School Year 2024-2025. Quantitative research design was used in the study. Total enumeration was utilized in selecting the 20 Grade 6 pupils who had poor mastery level in Mathematics particularly in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools. Results showed that the mastery level of the respondents in solving routine and non-routine problems involving finding the percentage, rate, and base using appropriate strategies and tools before the intervention was average prior to using the indigenized learning activity sheets. After using the indigenized learning activity sheets, mastery level of the respondents was high and indicated that the use of culturally relevant and context-based learning materials effectively enhanced students' problem -solving skills and overall mathematical competence. The indigenized learning activity sheets had successfully facilitated deeper understanding and application of mathematical concepts, contributing to improved learner performance. The results revealed a statistically significant difference in the mastery levels of the respondents before and after the use of indigenized learning activity sheets. Therefore, it can be concluded that incorporating culturally relevant and context-based learning materials positively impacts pupils' mastery of mathematical concepts.

Keywords: Indigenized learning activity sheets, least mastered competency in Mathematics

INTRODUCTION

Mathematics is one of the subjects in the elementary that can be applied in the daily lives of the pupils. Pupils who study mathematics get critical problem-solving abilities that they can use in everyday situations and beyond. It teaches pupils to think critically, uncover pertinent information, and use reasoning to solve problems. These abilities are crucial for both academic achievement and overcoming obstacles in the real world like planning, budgeting, and making decisions.

According to the Matatag Curriculum, mathematics is a general education subject taught in primary and higher education. Pupils are expected to gain an appreciation of and understanding of its principles as an applied subject by using appropriate technology in problem-solving, critical thinking, communicating, reasoning, making connections, representations, and decisions in real life. Basic mathematical ideas are taught in this order in education in the Philippine context.

However, low performance in this area is still noticeable, though. People live in a mathematical environment where using a spreadsheet, selecting an insurance or health plan, or making purchasing decisions all depend on mathematical knowledge. There has been a significant increase in the level of mathematical reasoning and problem solving required in the job. Those who possess an understanding of mathematical theory will have an advantage over others in this kind of world when it comes to doing mathematics. Proficiency in mathematics creates pathways to prosperous futures, whereas insufficient mathematical proficiency blocks those pathways. Even though every pupil is unique in their needs, interests, and talents, they all need to be able to use mathematics in their personal and professional lives as well as

in their future academic endeavors. Every learner should have the chance to appreciate the beauty and power of mathematics. In order to tackle problems creatively and resourcefully and to compute fluently, students must acquire a new set of fundamental mathematics skills (Acosta, 2023).

International recognition of mathematics' importance is widespread for the sake of a country's economy as well as the requirement that its citizens be literate in mathematics and science. No topic in the curriculum has attracted more attention than mathematics today, according to Tabago (2011), cited in Hizon (2019). However, it is disheartening to see that the current condition of mathematics education, as evaluated by eminent scientists in both local and international circles, is "discouragingly inadequate.

It took a while to realize how important mathematics is to daily lives. And as a result of these findings, there are more technology or Industrial Era, during this time technological devices are used in many ways. These days, the use of mathematics aids in the development and invention of such technology-based tools. These applications make life easier for us. The findings indicate the nation's education system's decline in quality.

Additionally, Martinez (2025) cited that the Philippines did poorly in the 2022 Program for International Student Assessment (PISA) where the Philippines ranked 77th out of 81 countries with scores significantly below the OECD average: 355 in mathematics, 347 in reading, and 373 in science (compared to OECD averages of 472, 476, and 485, respectively). It is depressing to observe that many students have tendency to grow afraid of mathematics and become more worried to learn, which results in bad performance in the subject, given the significance of mathematical knowledge and abilities to be successful in any human effort (Mazana et al., 2018). Students even view the subject's requirements as a nightmare, which obscures the subject's significance as the primary means of fostering higher-order cognitive abilities and logical thinking in them (Visitacion, 2020).

Actually, a number of evaluations may show how poorly students are doing in mathematics. According to the most recent results of the Organization for Economic Co-operation and Development's (OECD) Programme for International Student Performance (PISA), Filipino students came in last out of 79 participating nations and in close second place in science and mathematics. Briones claims that the 2022 PISA results highlight the importance of addressing basic education quality even more. According to the Trends in International Mathematics and Science Study (TIMSS) 2019 results released by the International Association for the Evaluation of Educational Achievement (IEA), students in the Philippines are not doing well in the subject of mathematics. They scored 297 in the subject, which is much lower than students in any other participating country and places them last out of 58 countries (Bernardo, 2020). Furthermore, the low performance of Filipino students was highlighted in the results of both local and international assessments on student performance in 2019, which brought the quality of education in the nation under scrutiny. According to Education Secretary Leonor Briones, Filipino students' results on the National Achievement Test (NAT), a large-scale examination, tend to indicate low proficiency levels, particularly in Science, Math, and English.

Courses in Mathematics are always thought to be among the hardest to both instruct and educate. Based on the part on Schools Division Office Monitoring and Evaluation results of the Periodic Test, only a small number of institutions were able to achieve each grade period the quality education criteria of 75% proficiency level. To address this, numerous interventions have been presented and put into practice when teaching mathematics, but even so, it has not been possible to meet the 75% competence level criteria for high-quality education.

With this, research indicates that pupils struggle with mathematics due to its abstract nature particularly on mathematical problem solving. Teachers' failure to indigenized the issue prevents pupils from understanding Math concepts and ideas to the fullest extent. If pupils are able to independently experience the competencies that they need to learn, Math will be better comprehended.

Indigenization is seen as a potential solution to these problems to address and to fix the issues with instructional material shortcomings and to make learning and teaching in this field relevant and responsive. The use of locally produced teaching and learning materials is encouraged, as per the Implementing Rules and Regulations (IRR) of RA 10533, provided that it is approved by the division or regional education unit and complies with national policies and standards (DO No.43, s. 2013).

In summary, indigenized learning activity sheets in Mathematics are contextualized, culturally relevant educational tools that integrate indigenous knowledge and practices into math instruction to enhance understanding, engagement, and performance.

The gaps of this study present that most of the studies cited focus on contextualization with less studies on indigenization. Indigenization is similar to contextualization. The practice of connecting the curriculum to a place, circumstance, or field of application in order to make the competences applicable, significant, and helpful to all students is known as contextualization. When education and curricula are more inclusive, all students can gain from the chance to experience and unlearn the dual histories of Indigenous and non-Indigenous peoples. This has the potential to extend pupils' horizons and improve their understanding of this nation. In accordance with DepEd Order N. 32 S. In 2015, the term "indigenization" refers to the processes of improving the curriculum, competences, educational materials, and methods of instruction in light of the historical, sociocultural, and biogeographical context of the learner's community.

Therefore, the purpose of this study is to improve the least mastered competency in mathematics using indigenized learning activity sheets for Grade 6 pupils.

Comparably, according to the assessment based from the examination given, majority of grade VI students at Tactac Elementary School had the least amount of mastery in mathematics. Consequently, this motivates the proponent to carry out research, specifically focusing on enhancing the least proficient competencies in Mathematics 6 particularly in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools.

The least mastered competency is similar with the 2016 study by Bostic et al. (2016) demonstrated that sixth-grade students exposed to TTPS showed significant improvements in problem-solving performance compared to peers receiving traditional instruction. While the intervention group solved more complex problems, they underperformed on standardized unit tests, suggesting a need for balanced instructional methods. A 2023 Frontiers in Education study found that students' problem-solving understanding directly influences mathematics learning outcomes.

The study is anchored on the Department of Education (DepEd) Philippines' emphasis on contextualized, indigenized and culturally responsive teaching materials. DepEd promotes the use of indigenized curricula and learning resources that integrate indigenous knowledge and local contexts to make learning more relevant and effective for learners, especially those from indigenous and culturally diverse communities. This aligns with DepEd's Indigenous Peoples Education (IPEd) program and its policies on curriculum indigenization, which aim to enhance learners' understanding by connecting academic content with their cultural backgrounds (Deped Order No. 15, s. 2015.)

Also, the study is anchored on the research agenda of NVSU-CTE particularly on instruction and curriculum and development on assessment and evaluation of learning.

In Tactac Elementary School, the researcher who is a Grade 6 Mathematics teacher observed that most of the Grade 6 pupils experienced difficulties in mastering the competencies in Mathematics 6. "Mahirap iyong lesson sa Math;" "Hindi ko naman naiintindihan iyong lessons natin sa Math; and "Nakakabagot namang magsolve ng routine and non-routine problems." These are just few of the sentiments heard by the researcher from the Grade 6 pupils.

Thus, the researcher was motivated to conduct this study.

Statement of the Problem

The study aimed to improve the least mastered competency in Mathematics using indigenized learning activity sheets for Grade 6 pupils at Tactac Elementary School for the School Year 2024-2025.

Specifically, the study found answers to the following research questions:

1. What is the mastery level of the respondents in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools before using the indigenized learning activity sheet?
2. What is the mastery level of the respondents in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools after using the indigenized learning activity sheets?
3. Is there a significant difference on the mastery level of the respondents before and after using the indigenized learning activity sheets?

HYPOTHESIS

There is no significant difference on the mastery level of the respondents before and after using the indigenized activity sheets.

METHODOLOGY

This study used the quantitative design of research to collect data regarding the indigenous learning activity sheets in Mathematics.

Quantitative research is a systematic method of collecting and analyzing numerical data to describe characteristics, test hypotheses, identify patterns, and establish cause-and-effect relationships. In education, it provides measurable evidence that can confirm or disprove theories and is often used to evaluate the effectiveness of instructional interventions through statistical analysis (Scribbr, 2023; Researcher.life, 2023).

In relation to the study on improving the least mastered competency in Mathematics using indigenized learning activity sheets, quantitative research is appropriate because it allows the researcher to measure students' performance before and after the intervention numerically. This approach helps determine whether the use of culturally relevant, indigenized materials significantly improves learners' mastery of specific math competencies. By quantifying learning outcomes, educators can objectively assess the effectiveness of these tailored learning tools and generalize findings to similar learner populations (SOE Online, n.d.; Scribbr, 2023).

This study also used quasi-experimental. A pre-test and post-test were administered before and after using the indigenized learning activity sheets. The purpose of this study was to evaluate the pupils' pre- and post-test results after using the Indigenized Learning Activity Sheets.

The study used total enumeration method in choosing the respondents of the study. Instead of choosing a sample or subgroup from the population, the researcher looks at the complete population that satisfies specific criteria. In order to ensure thorough coverage and lessen sample bias, it entails gathering data from each individual in the population or group.

This study was conducted Tactac Elementary School. This is one of the public elementary schools in the municipality of Sta. Fe, Nueva Vizcaya. The school has 186 pupils, 8 teaching and 1 non-teaching staff. The school is headed by head teacher.

The respondents of the study were the sixth-grade pupils of Tactac Elementary School. All of the grade 6 students who were selected by total enumeration were included in the study since based from the assessment particularly the examination it came out that most of the pupils did not master the competency in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools. The study included 20 respondents (100.00%) out of whom 11 male and 9 female.

The main tool for acquiring the data for the study was the teacher-made pre-test/post-test. This measured the improvement of the least mastered competencies in Mathematics 6 using the indigenized learning activity sheets. The Teacher-Made Test. Was the assessment tool designed to gauge the least-mastered competency of the Grade 6 pupils in Mathematics measured the least-mastered competencies from the certain quarter.

The competency that was measured was included in the Table of Specification. The pre-test and post -test materials and learning activity sheets were written and anchored on the least mastered competency that was addressed. The pre-test had content validation by expert. The scores in the pre-test and post-test were used as the basis for mastery level. The mastery scale used in the DepEd to identify the mastery level of the respondents in the competency being tested was used.

In data gathering procedure, the proponent used the least-mastered competencies in Mathematics 6 to make of the teacher-made multiple-choice questions. The panel members validated the questions once the proponent has developed them. The recommendations were integrated and made available for distribution to the respondents following validation.

The sixth-grade students at Tactac Elementary School received the research tool. Before the administration, protocol was closely adhered to by working with the principal of the school and obtaining con-

sent from the respondents' parents through a parental waiver. Absolute secrecy and honesty shall also be adhered to religiously.

The validity of the instruments was established by the validators. In the validation process, the test questions, key to correction and the rubric for scoring were included.

Ethical considerations like asking permission from authorities and providing parents' waivers were strictly followed.

The study used the following statistical tools: Mean, Frequency and Percentage. The level of competence of the respondents in the mathematics 6 competencies was described using these statistical tools.

Paired t-test. This was utilized to ascertain whether there is a significant difference between the participants' mastery levels before and after using the indigenous learning activity sheets.

For statistical interpretation, the five percent (5%) level of significance was applied.

FINDINGS

The findings of the study are presented here. The collected data were used in order to address the issues mentioned in Chapter 1.

Table 1. Mastery Level of the Respondents in Solving Routine and Non-Routine Problems Involving Finding the Percentage, Rate and Base using Appropriate Strategies and Tools Before Using the Indigenized Learning Activity Sheet

Level	Score Range	Frequency	Percentage
High	19-24	10	50
Average	13-18	10	50
		Mean	18.45
		Level	Average

The data in table 1 show that mastery level of the respondents in solving routine and non-routine problems involving finding the percentage, rate and base using appropriate strategies and tools before using the indigenized learning activity sheet is described as average. This is indicated by the computed mean of 18.45.

This average mastery level comprises 10 or 50% has average mastery level with a score range of 13-18 while 10 or 50% has high mastery level with the score range 19-24.

The data presented in Table 1 means that before the implementation of the indigenized Learning Activity Sheet (LAS), the majority of the Grade 6 respondents shown an average mastery level in solving both routine and non-routine mathematical problems involving percentages, rates, and bases.

With 50% of students scoring in the "average" range (13–18) and 50% in the "high" range (19–24), the pre-intervention data reveals an average mastery level (mean = 18.45), highlighting notable variation in students' fundamental abilities to solve percentage, rate, and base problems. This discrepancy raises the possibility that standard teaching approaches may not sufficiently meet the varied learning demands of pupils, especially those in the average mastery category. Recent research is examined below to put these findings in context and show how indigenized interventions can close this gap.

Generally, the pre-intervention mastery levels highlight how traditional pedagogies can't meet the needs of a wide range of learners. According to recent research, indigenized interventions regularly improve both average and high achievers by including local contexts, cooperative activities, and culturally relevant models. In addition to raising test scores, these methods help students better apply mathematical ideas to situations that are pertinent to their cultural identities.

It is probable that 50% of students in the average range had difficulty using abstract frameworks for problem-solving that were unrelated to their real-world experiences. According to Lo (2023), native Taiwanese students first displayed comparable difficulties but saw a 70% increase in performance with the use of remedial modules that were infused with their culture. These courses allowed students to relate mathematical ideas to existing knowledge by substituting culturally relevant situations for generic examples (such as using traditional weaving patterns to teach ratios).

Further, the disparity between high and average competence levels could be the result of uneven application of conventional techniques. According to Kadonsi (2024), 82% of participants moved into the "high mastery" category after the intervention, demonstrating more consistent advances among Zambian

pupils exposed to group activities based on indigenous knowledge (such as cooperative beadwork designs to teach fractions). By encouraging peer learning, these cooperative, culturally-based tasks can reduce variability.

In like manner, Pabillaran (2024) found that after completing locally developed practical activities, Higaonon students in the Philippines who performed well on baseline tests subsequently enhanced their capacity to apply percentages and ratios to practical situations (such as figuring out harvest yields). This supports the notion that localized resources enable exceptional students to use their knowledge in situations that are culturally appropriate.

Table 2. Mastery Level of the Respondents in Solving Routine and Non-Routine Problems Involving Finding the Percentage, Rate and Base using Appropriate Strategies and Tools After Using the Indigenized Learning Activity Sheet

Level	Score Range	Frequency	Percentage
Very High	25-30	5	25
High	19-24	15	75
		Mean	23.60
		Level	High

Mastery level of the respondents in solving routine and non-routine problems involving after using the indigenized learning activity sheet is described as high. This is indicated by the mean 23.60.

The mean comprises 15 or 75% have high mastery level with the score range 19-24 and 5 or 25% have very high mastery level with the score range 25-30.

The finding that the mastery level of respondents in solving routine and non-routine problems after using the indigenized Learning Activity Sheet (LAS) is described as high, with a mean score of 23.60, indicates substantial improvement in their problem-solving skills. Specifically, 75% of the pupils achieved a high mastery level (scores 19-24), and 25% attained a very high mastery level (scores 25-30).

This suggests that the indigenized learning activity sheet effectively supports learners in mastering mathematical problem-solving competencies by contextualizing content in culturally relevant ways. Though the description of the pre-test and post are both high, the result show improvement after using the indigenized learning activity sheet.

The finding is consistent with previous research showing that problem-solving skills and idea knowledge are positively correlated. Riong et al. (2022), for instance, discovered a reciprocal association between students' problem-solving abilities and their grasp of mathematical concepts, especially when higher-order thinking skills (HOTS) like analyzing, evaluating, and inventing are the focus. Their research supported the efficacy of contextualized and mastery-based instructional approaches by demonstrating that improved concept mastery results in improved problem-solving performance and vice versa.

Similar to this, Capuyan (2021) showed that using contextualized Learning Activity Sheets greatly enhanced students' academic achievement and scientific problem-solving abilities, suggesting that learning resources based on learners' contexts promote greater conceptual understanding and application.

Moreover, mastery-style teaching approaches in mathematics, which emphasize deep understanding and sustained attainment through scaffolded problem-solving practice, have been shown to lead to higher mastery levels and improved problem-solving competencies (Westley et al., 2024). This supports the notion that indigenized learning activity sheet, by embedding cultural relevance and mastery learning principles, can elevate learners' mathematical problem-solving skills.

Hizon (2019) demonstrated that contextualized learner materials, including manipulatives and culturally relevant examples, significantly improve mathematical problem-solving skills, supporting the rationale for using indigenized LAS despite high initial mastery levels.

Table 3. Summary of t-test Computation on the Difference in the Mastery Levels of the Respondents Before and After Using the Indigenized Learning Activity Sheets

Tests	Mean	Computed t-test	p-value	Remarks
Pretest	18.45	10.92	<0.001	Significant
Post test	23.60			

The summary of t-test computation on the difference in the mastery levels of the respondents before and after using the indigenized learning activity sheets has computed t-test of 10.92 with p-value <0.001 which is lesser than 0.05. Hence, there is a significant difference on the mastery level of the respondents before and after using the indigenized learning activity sheets. Therefore, the null hypothesis is rejected.

The computed t-test value of 10.92 (p = <0.001)** indicates a statistically significant improvement in mathematics mastery levels after using indigenized learning activity sheets (LAS). This result strongly supports the effectiveness of culturally contextualized materials in enhancing mathematical competencies among learners.

The significant difference in mastery levels (pre-test vs. post-test) suggests that indigenized LAS successfully bridged learning gaps by aligning mathematical concepts with learners' cultural contexts. The high t-value with the corresponding p-value reflects a large effect size, meaning the intervention had a substantial practical impact. This aligns with research showing that culturally relevant materials improve engagement, retention, and problem-solving skills in mathematics.

The finding of this study is supported by Zarate et al. (2022) who found that tailored worksheets enhance mastery, similar to indigenized LAS.

When compared to conventional approaches, Hizon (2019) discovered that contextualized or indigenized learning resources considerably increased math achievement scores. Indigenized learning activity sheets serve as contextualized resources that relate abstract mathematics to situations from everyday culture.

Moreover, East (2023) cited that integrating indigenous knowledge into curricula fosters deeper engagement and cognitive connections, improving academic outcomes. Indigenized learning activity sheets operationalize this theory by embedding local cultural contexts into math problems.

To support this, Sasanti et al. (2025) found that collaborative problem-solving models (e.g., group work with culturally relevant tasks) significantly improved critical thinking and math scores. In the present study, Indigenized LAS likely promoted similar collaborative, context-based learning.

Damopolii et al. (2023) also found that pupils' problem-solving understanding directly correlates with math achievement, particularly when tasks are contextualized. Indigenized LAS enhance problem-solving by grounding math in familiar cultural contexts.

Indigenization encourages students to comprehend and honor cultural legacy (Bringas, 2014). In order to create learning equity that is suitable for all types of learners to relate their understandings in the real context of their lives, indigenized learning refers to adopting the current environment, setting, and situation adjustment. Teachers should think about this as they move on with the teaching-learning process. To effectively teach a subject and give pupils a sense of belonging in the classroom, teachers can start the lecture by including the background of the pupils' life. Engagement will come if the emotional component comes first.

For instance, learners benefit from indigenization of information since it makes the content more familiar and pleasurable to study (Mahabadi, 2012), referenced in Suguitan and Natividad (2022). Learning that pupils do and remember is what they will always remember. As a result, utilizing indigenized materials is equivalent to respecting and honoring the pupils' social and cultural identities. By connecting and presenting the lesson in the context of the dominant local environment, culture, and resources, it also aids in teachers' and pupils' conceptual understanding. Lessons will therefore become more applicable to real-world situations, tailored and suitable.

CONCLUSION

Based from the findings of the study, it is hereby concluded that:

1. The mastery level of the respondents in solving routine and non-routine problems involving finding the percentage, rate, and base using appropriate strategies and tools before the intervention was average.
2. The mastery level of the respondents in solving both routine and non-routine mathematical problems after using the indigenized learning activity sheets is high.
3. The results of the t-test analysis reveal a statistically significant difference in the mastery levels of the respondents before and after the use of indigenized learning activity sheets.

RECOMMENDATIONS

In light of the conclusions of the study, it is hereby recommended that:

1. Teachers may explore other means of intervention aside from the indigenized learning activity sheets to deepen learners' problem-solving skills and enhance their ability to apply percentage, rate, and base concepts in more complex, real-life situations. Integrating culturally relevant contexts will sustain engagement and promote higher-order thinking beyond foundational mastery.
2. It is recommended that teachers continue to develop and integrate indigenized learning activity sheets into mathematics instruction to leverage culturally relevant and context-based materials. This approach should be expanded across grade levels to further enhance students' problem-solving skills and overall mathematical competence. Additionally, ongoing training for educators on developing and using indigenized resources will help sustain and maximize these positive learning outcomes.
3. Teachers and curriculum developers incorporate indigenized learning activity sheets regularly in mathematics instruction to enhance pupils' understanding and mastery of mathematical concepts. Additionally, schools should support the development and use of culturally relevant, context-based learning materials to make mathematics more engaging and meaningful for learners. The indigenized learning activity sheet can be disseminated to other teachers and schools to improve the least mastered competency of the pupils in Mathematics.
4. Other researchers are recommended to further explore the use of indigenized Learning Activity Sheets (LAS) by expanding the study to different grade levels and subject areas to validate and generalize the positive effects on mastery levels. It is also suggested to investigate the role of teacher competence in cultural knowledge and assessment skills in the effective construction and implementation of indigenized LAS. Additionally, conducting longitudinal studies could provide insights into the sustained impact of these materials on learners' academic performance. Finally, integrating collaborative and technology-enhanced approaches with indigenized LAS may further enhance learner engagement and mastery.

REFERENCES

Acosta, R. (2023). Supplementary Activity Worksheets in Mathematics 1 of Bangar District. International Journal of Research Publication and Reviews, Vol 4, no 10, pp 1045-1049. https://ijrpr.com/uploads/V4ISSUE10/IJRPR18204.pdf

Alvaro, K.G. (2020). Self-help activity sheets in Health 2. (Unpublished Master's Thesis). Laoag City: Divine Word College of Laoag – Graduate School.

Arnold, K. (2016). Theoretical frameworks for math fact fluency. Journal of Education and Practice, 7 (6), 67-74. https://files.eric.ed.gov/fulltext/EJ1135680.pdf

Bernardo, J. (2020). Ph ranks last among 58 countries in Grade 5 Math, Science: study. https://bit.ly/3wQm2Mc

Bostic, J. D., Pape, S. J., & Jacobbe, T. (2016). Encouraging sixth-grade students' problem-solving performance by teaching through problem solving. Investigations in Mathematics Learning, 8(3), 31–42. https://files.eric.ed.gov/fulltext/EJ1094896.pdf

Bringas, H. A. (2014). Localization-contextualization-slideshare.www.slideshare.net/lenferndz/localization-contextualization

Cantonjos, J. & Janer, S. (2022). Effectiveness of Utilizing Learning Activity Sheets to Improve the Solving Skills involving Sampling Distribution of Grade 11 Students. United International Journal for Research & Technology (UIJRT), 3(8), pp.53-59.

Castañeda, M. O. (2016). Instructional materials in math 7 [Presentation]. SlideShare. https://www.slideshare.net/slideshow/instructional-materials-in-math-7/64977711

Castillo, C. K. (2018). Contextualization, localization, indigenization and where to find them. https://tinyurl.com/localizationandindigenization.

Center for Occupational Research and Development (2012). What is contextualize teaching? http://www.cord.org/contextualized-learning-definition/

Damopolii, M. (2023). The influence of students' problem-solving understanding on mathematics learning results. Frontiers in Education, 8, Article 1088556. https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2023.1088556/full
Deped Order No. 15, s. 2015. Indigenous peoples Education Curriculum. https://www.scribd.com/document/461564110/DO-s2015-32
Department of Education. (2015). DepEd Order No. 32, s. 2015: Policy guidelines on the indigenization of the curriculum [PDF]. https://www.deped.gov.ph/wp-content/uploads/2015/07/DO_s2015_32.pdf
Department of Education. (2017). National Research Agenda for Teacher Education. Philippine Normal University.
Dimacali, K.B. (2018). Localization/Localized materials. https://bit.ly/3MOPhVk
Damopolii, M. (2023). The influence of students' problem-solving understanding on mathematics learning results. Frontiers in Education, 8, Article 1088556. https://doi.org/10.3389/feduc.2023.1088556
Dooley, T., Dunphy, E., & Shiel, G., (2014). Mathematics in early childhood and Primary Education: Teaching and learning. National Council for Curriculum and Assessment.
Dugan, J. & Ricafort, J. (2023). Effectiveness of Developed Learning Activity Sheets (LASS) In Improving the Performance of Students in Grade 9 Chemistry. American Research Journal of Humanities & Social Science (ARJHSS). Volume-06, Issue-05, pp-62-69
East, A. (2023). Indigenous education theory. EastKeep. https://annaeast.substack.com/p/indigenous-education-theory
Faith, M. (2015). DepEd issues IPEd Curriculum Framework. https://www.eaglenews.ph/deped-issues-iped-curriculum-framework/#google_vignette
Frontiers in Education. (2023). The influence of students' problem-solving understanding and results of students' mathematics learning. Frontiers in Education, 8. https://doi.org/10.3389/feduc.2023.1088556
Gerodias, D. (2023). A focus on the contextualized learning activity sheets. International Journal of Multidisciplinary Educational Research and Innovation Volume 01, Issue 01. https://philarchive.org/archive/GERAFO
Hizon, I. (2019). Project CLMM (Contextualized Learner Material in Mathematics) an Input on Pupils Academic Performance. JPAIR Institutional Research. Volume 13. DOI: https://doi.org/10.7719/irj.v13i1.780
Hizon, I. R. (2019). Enhancing Grade 4 students' mathematical problem- solving skills using manipulatives. International Research Journal, 13, 22-30. https://davaoresearchjournal.ph/index.php/main/article/download/3 03/178/764
Hooper, L. et al. (2014). Integrating Competencies and Learning Outcomes in Core Courses. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4037465/
Hundred (2018). Localized, Contextualized and Indigenized Strategic Intervention Material (SIM) - LCI SIM-BAKAS. https://hundred.org/en/innovations/localized-contextualized-and-indiginized-strategic-intervention-material-sim-lci-sim-bakas
Indigenizing Learning. (2024). Building Indigenous Mathematical Skills. University of British Columbia. https://indigenizinglearning.educ.ubc.ca/curriculum-bundles/building-indigenous-mathematical-skills/
Gosselin, D. (2017). Competencies and. Learning Outcomes. https://serc.carleton.edu/integrate/programs/workforceprep/competencies_and_LO.html
Kadonsi, K. (2024). Empowering students through indigenous knowledge: Benefits of indigenizing mathematics education in Southern Province, Zambia. International Journal of Research and Innovation in Social Science, 8(8), 1034-1059. https://dx.doi.org/10.47772/IJRISS.2024.808080
Lo, T.-Y. (2023). The investigation of culture-integrated mathematics remedial modules on indigenous students' learning outcome. PUPIL: International Journal of Teaching, Education and Learning, 7(2), 180–195. https://doi.org/10.20319/pijtel.2023.72.180195
Lorbis, J. (2019). Utilization of contextualized teaching and learning (CTL) approach in grade two Araling Panlipunan. Published Thesis. Southern Luzon State University.
Martinez, A. L. S. (2025). Students more prepared for PISA according to DepEd. BusinessWorld. https://www.bworldonline.com/education/2025/04/16/666118/students-more-prepared-for-pisa-according-to-deped/

Mazana, M., Montero, C. and Casmir, R. (2019). Investigating students' motivation towards learning Mathematics. https://files.eric.ed.gov/fulltext/EJ1227188.pdf.
Moltz, D. (2010). Encouraging deep learning. Inside Higher Ed. http://www.insidehighered.com
Nardo, M. T. B. (2020). Indigenization of Mathematics Lessons: Its Effect on Students' Performance and Attitude Towards Mathematics. International Journal of Scientific & Technology Research, 9(2), 4092-4097.
Nuqui, J. (2017). Significance of Contextualization in Teaching AP.https://www.pressreader.com/philippines/sunstarpampanga/20170629/281612420414525
OECD. (2025). Future-focused mathematics curricula: Empowering learners for tomorrow. OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/02/future-focused-mathematics-curricula_015b318c/18036510-en.pdf
Official Gazette. (2013). Republic Act No. 10533 (The Constitution of the Republic of the Philippines). https://www.officialgazette.gov.ph/constitutions/1987-constitution/
Pabillaran, M. A. (2024). The impact of indigenized practical tasks to Higaonon students' learning behavior and mathematics performance. American Journal of Educational Research, 12(4), 123-131.
Reyes, J. D., Insorio, A. O., Ingreso, M.V., Hilario, F.F., & Gutierrez, C. (2019). Conception and application of contextualization in mathematics education. International Journal of Educational Studies in Mathematics, 6(1), 1-18.
Reyes, J., Insorio, A., Ingreso, M., Hilario, F. & Gutierrez, C. (2018). Conception and Application of Contextualization in Mathematics Education. International Journal of Educational Studies in Mathematics, 2019, 6(1), 1-18. https://dergipark.org.tr/tr/download/article-file/664590
Rillo, R. & Alieto, E. (2018). Indirectness Markers in Korean and Persian English Essays: Implications for Teaching Writing to EFL Learners. The Journal of English as an International Language. Volume 3, Issue 22. https://files.eric.ed.gov/fulltext/ED596726.pdf
Rodrigues, S. (2023). Problem-solving and mathematical competence: A look to the students' abilities. Procedia Computer Science, 213, 123-130.https://www.sciencedirect.com/science/article/pii/S1871187123002 286
Saka, M. (2019). Indigenize-blended learning approach: An intervention to improve numeracy skills of non-numerate learners. International Journal of Research and Innovation in Social Science,3(9),1-12.
Sarmiento, A. P. (2024). Praxis in Curriculum Indigenization by Mathematics Teachers of Indigenous Peoples' Education (IPEd) in Ifugao, Philippines. Spring Journals.
Sasanti, R., Herdian, H., & Nursaodah, N. (2025). The effect of collaborative problem solving (CPS) model on critical thinking skills in mathematics subjects. Pakistan Journal of Language, Literature and Social Sciences, 5(1), 3682–3695. https://www.pjlss.edu.pk/pdf_files/2025_1/3682-3695.pdf
Suguitan, L. & Natividad, E. (2022). Localized Game-Based Learning Activity Sheets in Mathematics 7. American Journal of Multidisciplinary Research and Innovation, 1(4):210-227 DOI:10.54536/ajmri.v1i4.723
Tabago, L. C. (2011). The effectiveness of constructivist approach-based experiments in teaching selected physics concepts. International Journal of Multidisciplinary Research, 2(1). http://bit.ly/2PJQlhA
Tablit,M.(2019). Mathematics:Gateway for national progress. https://businessmirror.com.ph/2019/10/16/mathematics-gateway-for-national-progress/
Taoy, T. (2021). Effectiveness of Contextualized Learners' Activity Sheets (Lass) to the Performance of The Kindergarten Pupils. International journal of advanced multidisciplinary studies. Volume 1, Issue 3.
Tilson, J. L., Castek, J., & Goss, M. (2010). Exploring the influence of science writing instruction on fourth graders' writing development. In R. T. Jimenez, V. J. Risko, M. K. Hundley & D. W. Rowe (Eds.), 59th Yearbook of the National Reading Conference (pp. 117–134). Oak Creek, CA: National Reading Conference
Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
Visitacion, M.S. (2017). Competency-based activities in Mathematics using the mother tongue for Grade 1. Laoag City: Divine Word College of Laoag – Graduate School.
Zarate, Fernandez, & Dorias. (2022). A learning activity to enhance mathematical level. Universal Journal of Educational Research, 1(1), 59. https://philarchive.org/archive/ZARDWA

READINESS OF SCIENCE LABORATORY FACILITIES: ITS EFFECT ON TEACHERS' COOPERATIVE LEARNING AND LEARNERS' PROCESS SKILLS ACQUISITION

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ABSTRACT

This study examined the effect of science laboratory facility readiness on teachers' cooperative learning and students' process skills acquisition in Guindulman during the 2024-2025 school year. Surveys of 184 teachers and 230 students revealed insufficient science equipment despite overall facility readiness. Teachers exhibited strong cooperative learning, enhancing students' skills (e.g., observing, measuring). Student age and grade level influenced skills, while facility readiness and cooperative learning predicted performance. Improving labs and collaboration is crucial for boosting scientific competencies.

Keywords: science laboratory readiness, cooperative learning, process skills acquisition, science education, student performance predictors

INTRODUCTION

Science education is crucial for developing problem-solving skills, yet Filipino students rank among the lowest in global Science assessments (PISA 2018, 2022). Systemic issues—particularly inadequate lab facilities and teaching materials—hinder effective instruction and widen regional disparities (EDCOM 2024; Nuevo, 2024; Anto et al., 2023). While cooperative learning improves engagement and process skills (Solomon, 2024; Gillies, 2020), resource shortages limit its implementation (Barrett et al., 2019). Inquiry-based strategies are vital for skill development (Kumar, 2023), but facility gaps persist. This study examines how lab readiness affects teachers' cooperative learning and students' process skills in Guindulman District (2024–2025), addressing a critical local research gap.

STATEMENT OF THE PROBLEM

The main thrust of this study was to determine the impact of the readiness of science laboratory facilities on teachers' cooperative learning and process skills acquisition of learners in the District of Guindulman during the third quarter for the school year 2024-2025.

Specifically, it sought to answer the following questions:

1. What is the perception of the respondents on the readiness of Science facilities in public schools in terms of:
   1.1 student cohesiveness;
   1.2 open-endedness;
   1.3 involvement;
   1.4 rule clarity; and
   1.5 material environment?
2. What is the perception of the respondents on the level of cooperative learning implemented by teachers in Science classrooms in terms of:
   2.1 social skills

2.2 group processing;
2.3 positive interdependency;
2.4 stimulating interaction; and
2.5 individual responsibility?

3. What is the perception of the respondents on the level of process skills acquisition of the learners in terms of:
   3.1 observing;
   3.2 measuring;
   3.3 classifying;
   3.4 inferencing;
   3.5 communicating; and
   3.6 hypothesizing?
4. Is there a significant relationship between the learners' level of process skills acquisition and their profile?
5. Which of the following factors significantly predict learners' process skills acquisition as to:
   5.1. readiness of science facilities; and
   5.2. teachers' cooperative learning?
6. Is there a significant relationship between the teachers' cooperative learning and the readiness of science facilities?
7. What intervention measures can be proposed based on the findings of the study?

RESEARCH METHODOLOGY

To assess the impact of Science laboratory readiness on teachers' cooperative learning and students' process skills in Guindulman for SY 2024–2025, the researchers used a quantitative descriptive-correlational design. Data were collected using adapted, validated survey questionnaires covering demographics, lab readiness, equipment availability, cooperative learning, and process skills. A purposive sample of 184 teachers and 230 students (totaling 414) from selected elementary and secondary schools participated. Data were tallied and analyzed using descriptive and inferential statistics, including percentage, weighted mean, Chi-square, simple linear regression, and Pearson correlation.

RESULTS AND DISCUSSION

This part of the research study presents, analyzes, and interprets the data on facility readiness, teachers' cooperative learning, and students' process skills acquisition.

Table 1.1. Perception on the Readiness of Science Facilities in Public Schools in terms of Student Cohesiveness

Statements	Teachers		Students		Overall	
The Science laboratory facilities…	WM	VI	WM	VI	AWM	VI
1. enable students to get along well with each other in this laboratory class.	3.18	R	3.10	R	**3.14**	**R**
2. provide ample opportunities for students to get to know other students in this laboratory class.	2.55	R	2.56	R	**2.56**	**R**
3. allow members of this laboratory class to assist each other when needed.	3.07	R	3.13	R	**3.10**	**R**
4. students to get to know each other well in this laboratory class.	3.12	R	3.09	R	**3.11**	**R**
5. enable students to rely on each other for help during laboratory classes.	2.96	R	2.93	R	**2.95**	**R**
6. help students learn the names of all their classmates in this laboratory class.	2.51	R	2.44	U	**2.48**	**U**
Average Weighted Mean	**2.90**	**Ready**	**2.87**	**Ready**	**2.89**	**Ready**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very Ready (VR)
2.50-3.24	Ready (R)
1.75-2.49	Unready (U)
1.00-1.74	Very Unready (VU)

Table 1.1 shows the perception of the respondents on the readiness of science laboratory facilities in public schools in terms of student cohesiveness.

Overall, the highest-rated statement was statement 1 "The science laboratory facilities enable students to get along well with each other in this laboratory class," with a combined average weighted mean of 3.14, indicating that both teachers and students perceive the laboratory as facilitating student collaboration. The lowest-rated statement overall was statement 6 "The science laboratory facilities help students learn the names of all their classmates in this laboratory class," with an average weighted mean of 2.48, showing that both teachers and students perceive challenges in fostering full student engagement due to limitations in the facilities. The overall average weighted mean was 2.89, indicating that while the science laboratory facilities are generally seen as "Ready" for promoting student cohesiveness, there are still areas that need improvement.

These findings are supported by Sykora (2022), who emphasized that the readiness of science laboratory facilities extends beyond merely having the necessary equipment; it also involves creating an environment that promotes collaboration, teamwork, and meaningful social interaction among students. Similarly, Mncube et al. (2023) highlighted that a well-organized and conducive laboratory environment plays a vital role in strengthening student cohesiveness.

Table 1.2 shows the perception of the respondents on the readiness of science laboratory facilities in public schools in terms of open-endedness.

Table 1.2 Perception on the Readiness of Science Facilities in Public Schools in terms of Open-endedness

Statements	Teachers		Students		Overall		
The Science laboratory facilities…	WM	VI	WM	VI	AWM	VI	
1. require students to design their own experiments to solve a given problem.	2.89	R	2.79	R	**2.84**	**R**	
2. encourage students to go beyond the regular laboratory exercises and experiment on their own.	2.93	R	2.86	R	**2.90**	**R**	
3. allow students to determine the best approach to proceed with laboratory experiments.	3.03	R	3.09	R	**3.06**	**R**	
4. encourage students to explore new ideas and approaches during laboratory experiments.	2.96	R	3.27	VR	**3.12**	**R**	
5. provide students with the freedom to modify laboratory procedures to test different hypotheses.	2.90	R	2.96	R	**2.93**	**R**	
6. offer students the opportunity to design and conduct experiments that go beyond the regular curriculum.	2.85	R	2.78	R	**2.82**	**R**	
Average Weighted Mean	**2.93**	**Ready**	**2.96**	**Ready**	**2.95**		**Ready**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very Ready (VR)
2.50-3.24	Ready (R)
1.75-2.49	Unready (U)
1.00-1.74	Very Unready (VU)

Overall, the highest-rated statement was statement 3 "The science laboratory facilities encourage students to explore new ideas and approaches during laboratory experiments," with a weighted mean of 3.12, described as "Ready." This reflects that both teachers and students generally feel the facilities encourage creative and exploratory thinking during laboratory experiments. The lowest-rated statement overall was statement 6 "The science laboratory facilities offer students the opportunity to design and conduct experiments that go beyond the regular curriculum," with a weighted mean of 2.82, indicating that while the laboratories provide some room for exploration, there are still constraints in offering more advanced or independent scientific inquiry. The overall average weighted mean was 2.95, showing that both teachers and students perceive the laboratory facilities as "Ready" in promoting open-endedness,

Similarly, Anto et al. (2023) highlighted that insufficient materials and equipment often force teachers and students to adhere strictly to guided experiments, limiting students' ability to engage in deeper, self-directed scientific inquiry, which aligns with the areas for improvement identified in this study.

Table 1.3. Perception on the Readiness of Science Facilities in Public Schools in terms of Involvement

Statements	Teachers		Students		Overall	
The Science laboratory facilities…	WM	VI	WM	VI	AWM	VI
1. provide opportunities for students to pursue their own science interests in this laboratory class.	3.00	R	3.03	R	**3.02**	**R**
2. enable students to collect different data than other groups do for the same problem during laboratory sessions.	3.02	R	2.81	R	**2.92**	**R**
3. allow students to apply theory from regular science classes during laboratory activities.	3.08	R	3.17	R	**3.13**	**R**
4. help students better understand the theory covered in regular science classes through laboratory sessions.	3.00	R	3.25	VR	**3.13**	**R**
5. encourage students to collaborate with others during laboratory sessions.	3.18	R	3.25	VR	**3.22**	**R**
Average Weighted Mean	**3.05**	**Ready**	**3.10**	**Ready**	**3.08**	**Ready**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very Ready (VR)
2.50-3.24	Ready (R)
1.75-2.49	Unready (U)
1.00-1.74	Very Unready (VU)

Table 1.3 shows the perception of the respondents on the readiness of science laboratory facilities in public schools in terms of involvement. Overall, the highest-rated statement was statement 5 "The science laboratory facilities encourage students to collaborate with others during laboratory sessions," with a weighted mean of 3.22, described as "Ready." This reflects a general perception that both teachers and students feel the laboratory facilities facilitate collaboration. The lowest-rated statement overall was statement 2 "The science laboratory facilities enable students to collect different data than other groups do for the same problem during laboratory sessions," with a weighted mean of 2.92, indicating that while there is a sense of involvement, the opportunities for variation in data collection could be further expanded. The overall average weighted mean was 3.08, described as "Ready," indicating that both teachers and students perceive the laboratory facilities as sufficiently involving.

As noted by Gillies (2020) and Foster (2020), collaborative learning experiences provide significant educational benefits, such as improved critical thinking, problem-solving, and communication skills. This is also consistent with the literature by Prieto-Saborit et al. (2022), which emphasizes the value of individualized contributions within group learning contexts to enhance student engagement and responsibility.

Table 1.4 Perception on the Readiness of Science Facilities in Public Schools in terms of Rule Clarity

Statements	Teachers		Students		Overall	
The Science laboratory facilities…	WM	VI	WM	VI	AWM	VI
1. have clear rules that guide students' activities in the laboratory.	3.31	VR	3.30	VR	**3.31**	**VR**
2. are formal, with clear rules imposed on students.	2.51	R	2.50	R	**2.51**	**R**
3. require students to follow specific rules in the laboratory.	3.16	R	3.20	R	**3.18**	**R**
4. have a clear protocol for students to follow in order to ensure safety during laboratory experiments.	3.16	R	3.33	VR	**3.25**	**VR**
5. provide students with the teacher's guidance on how to conduct experiments during laboratory sessions.	3.07	R	3.16	R	**3.12**	**R**
6. have clearer rules compared to students' other classes.	2.95	R	2.85	R	**2.90**	**R**
Average Weighted Mean	**3.03**	**Ready**	**3.06**	**Ready**	**3.05**	**Ready**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very Ready (VR)
2.50-3.24	Ready (R)

Table 1.4 presents the perception of the respondents on the readiness of science laboratory facilities in public schools in terms of rule clarity. Overall, the highest-rated statement was statement 1 "The science laboratory facilities have clear rules that guide students' activities in the laboratory," with a weighted mean of 3.31, indicating that both teachers and students believe the rules in the laboratory are well-established and help guide students' activities. The lowest-rated statement overall was statement 2 "The science laboratory facilities are formal, with clear rules imposed on students," with a weighted mean of 2.51, suggesting that while rules are present, there is a sense that they may not always be strictly enforced or are not as formal as they could be. The overall average weighted mean was 3.05, described as "Ready," reflecting that the laboratory facilities generally provide a clear structure in terms of rules.

This aligns with the concerns raised by Gillies (2020), who notes that the lack of consistent rule enforcement can negatively impact collaborative learning by creating ambiguity about student responsibilities and expectations in the laboratory setting.

Table 1.5 Perception on the Readiness of Science Facilities in Public Schools in terms of Material Environment

Statements	Teachers		Students		Overall	
The Science laboratory facilities…	**WM**	**VI**	**WM**	**VI**	**AWM**	**VI**
1. are spacious enough for students when conducting experiments.	2.43	U	2.62	R	**2.53**	**R**
2. have the equipment and materials needed for laboratory activities readily available.	2.26	U	2.77	R	**2.52**	**R**
3. provide students with laboratory equipment that is in good working condition.	2.89	R	2.54	R	**2.72**	**R**
4. maintain a comfortable temperature and air quality during laboratory sessions.	2.44	U	2.58	R	**2.51**	**R**
5. offer an inviting and conducive environment for students to work in.	2.60	R	2.88	R	**2.74**	**R**
6. have sufficient space for individual or group work.	2.72	R	2.94	R	**2.83**	**R**
Average Weighted Mean	**2.56**	**Ready**	**2.72**	**Ready**	**2.64**	**Ready**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very Ready (VR)
2.50-3.24	Ready (R)
1.75-2.49	Unready (U)
1.00-1.74	Very Unready (VU)

Table 1.5 shows the perception of the respondents on the readiness of science facilities in public schools in terms of the material environment. Overall, the highest-rated statement was statement 6 "The science laboratory facilities have sufficient space for individual or group work," with a weighted mean of 2.83, showing that both teachers and students generally agree on the adequacy of space in the laboratory. The lowest-rated statement overall was statement 4 "The science laboratory facilities maintain a comfortable temperature and air quality during laboratory sessions," with a weighted mean of 2.51, indicating that across all respondents, there is a consensus that the temperature and air quality in the laboratory is somehow not optimal. The overall average weighted mean was 2.64, described as "Ready," suggesting that while the material environment in the laboratories is generally adequate, improvements are needed in terms of equipment availability, sufficient space for experiments and laboratory's temperature and air quality.

A study by Balgopal et al. (2024) highlights that readily available equipment is essential for hands-on learning and scientific inquiry. However, both teachers and students expressed concerns about the availability of necessary materials and equipment, with teachers particularly noting a lack of immediate access.

Table 2.1. Perception on the Level of Teachers' Cooperative Learning in Science Classroom in terms of Social Skills

Statements	Teachers		Students		Overall	
The teacher…	WM	VI	WM	VI	AWM	VI
1. focus on developing students' dialogue, listening skills, and debate techniques.	3.26	VH	3.20	H	**3.23**	**H**
2. encourage students to reflect individually and as a group.	3.38	VH	3.37	VH	**3.38**	**VH**
3. guide students in making decisions collectively within their groups.	3.53	VH	3.28	VH	**3.41**	**VH**
4. ensure that each member of the group contributes to the group activities.	3.47	VH	3.33	VH	**3.40**	**VH**
5. foster a collaborative environment where students help each other with their tasks.	3.42	VH	3.40	VH	**3.41**	**VH**
6. ensure that the members of the group have complementary skills and abilities.	3.51	VH	3.34	VH	**3.43**	**VH**
Average Weighted Mean	3.43	**Very High**	3.32	**Very High**	3.38	**Very High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 2.1 shows the perception on the level of teachers' cooperative learning in the science classroom in terms of social skills. Overall, the highest-rated statement was statement 6 "The teacher ensures that the members of the group have complementary skills and abilities," with a weighted mean of 3.43, described as "Very High," showing that both teachers and students agree that teachers place significant importance on ensuring balanced group dynamics. The lowest-rated statement overall was statement 1 "The teacher focuses on developing students' dialogue, listening skills, and debate techniques," with a weighted mean of 3.23, described as "High." This indicates that while this aspect of cooperative learning is important, it is perceived as less emphasized compared to other areas. The overall average weighted mean was 3.38, indicating a "Very High" level of perceived cooperative learning in terms of social skills in the science classroom.

This aligns with the emphasis placed on positive interdependence in cooperative learning models (Prieto-Saborit et al., 2022), where students rely on one another's strengths to achieve common goals.

Table 2.2. Perception on the Level of Teachers' Cooperative Learning in Science Classroom in terms of Group Processing

Statements	Teachers		Students		Overall	
The teacher…	WM	VI	WM	VI	AWM	VI
1. recognize that the diversity of group members enhances the quality of the work.	3.33	VH	3.30	VH	**3.32**	**VH**
2. foster an environment where the differences between group members contribute to the group's success.	3.34	VH	3.20	H	**3.27**	**VH**
3. ensure that different roles within the group complement each other for effective collaboration.	3.31	VH	3.24	H	**3.28**	**VH**
4. encourage a variety of opinions within the group to enrich the discussion.	3.43	VH	3.32	VH	**3.38**	**VH**
5. promote the idea that the differences between group members lead to better outcomes.	3.44	VH	3.34	VH	**3.39**	**VH**
6. ensure that the group functions optimally by utilizing diverse perspectives.	3.40	VH	3.11	H	**3.26**	**VH**
Average Weighted Mean	3.38	**Very High**	3.25	**Very High**	3.32	**Very High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 2.2 shows the perception on the level of teachers' cooperative learning in the science classroom in terms of group processing. Overall, the highest-rated statement was statement 5 "The teacher promotes the idea that the differences between group members lead to better outcomes," with a weighted mean of 3.39, described as "Very High," indicating that both teachers and students agree on the importance of diversity for better group results. The lowest-rated statement was statement 6 "The teacher ensures that the group functions optimally by utilizing diverse perspectives," with a weighted mean of 3.26, described as "Very High." This suggests that while the value of diverse perspectives is recognized, there may be areas for further improvement in making sure that diverse perspectives are fully integrated to optimize group function. The overall average weighted mean was 3.32, indicating a "Very High" level of perceived group processing in cooperative learning in the science classroom.

Similarly, Prieto-Saborit et al. (2022) highlighted that groups composed of individuals with varying perspectives tend to make better decisions and achieve higher learning outcomes, reinforcing the idea that the diversity within groups contributes to better collective results.

Table 2.3. Perception on the Level of Teachers' Cooperative Learning in Science Classroom in terms of Positive Interdependency

Statements	Teachers		Students		Overall	
The teacher…	WM	VI	WM	VI	AWM	VI
1. encourage students to discuss their work as a group to assess, correct, and improve it.	3.51	VH	3.31	VH	**3.41**	**VH**
2. emphasize that each group member's contribution is crucial for the group's success.	3.51	VH	3.35	VH	**3.43**	**VH**
3. make sure the success of the group depends on the participation and contributions of all members.	3.52	VH	3.37	VH	**3.45**	**VH**
4. encourage students to collaborate and support each other when solving problems.	3.53	VH	3.39	VH	**3.46**	**VH**
5. ensure that the progress of each group member is linked to the overall progress of the group.	3.51	VH	3.22	H	**3.37**	**VH**
6. hold all members accountable for the group's outcome, ensuring they work towards a shared goal.	3.47	VH	3.20	H	**3.34**	**VH**
Average Weighted Mean	**3.51**	**Very High**	**3.31**	**Very High**	**3.41**	**Very High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 2.3 presents the perception on the level of teachers' cooperative learning in the science classroom in terms of positive interdependency. Overall, the highest-rated statement was statement 4 "The teacher encourages students to collaborate and support each other when solving problems," with a weighted mean of 3.46, described as "Very High," highlighting the strong emphasis on collaboration across both teachers and students. The lowest-rated statement was statement 6 "The teacher holds all members accountable for the group's outcome, ensuring they work towards a shared goal," with a weighted mean of 3.34, described as "Very High," suggesting that while positive interdependency is emphasized, there may be room for improvement in ensuring full accountability within the group. The overall average weighted mean was 3.41, described as "Very High," indicating a very high level of positive interdependency in the science classroom.

The high emphasis on collaboration and mutual support in problem-solving activities is supported by Gillies (2020), who emphasized that cooperative learning thrives when students actively engage with one another, sharing responsibility and working together to solve problems. This approach fosters a deeper understanding of the material, as students learn not only from the teacher but also from their peers, aligning with your finding that both teachers and students highly value collaboration in the learning process.

Table 2.4. Perception on the Level of Teachers' Cooperative Learning in Science Classroom in terms of Stimulating Interaction

Statements	Teachers		Students		Overall	
The teacher…	WM	VI	WM	VI	AWM	VI
1. create opportunities for students to engage directly with one another in collaborative work.	3.42	VH	3.32	VH	**3.37**	**VH**
2. encourage students to share their ideas, knowledge, and perspectives with each other.	3.57	VH	3.35	VH	**3.46**	**VH**
3. provide students with chances to collaborate and learn from one another's experiences.	3.60	VH	3.34	VH	**3.47**	**VH**
4. prompt students to ask questions and challenge each other's ideas to stimulate critical thinking.	3.57	VH	3.22	H	**3.40**	**VH**
5. facilitate group activities that require students to exchange knowledge and insights.	3.58	VH	3.33	VH	**3.46**	**VH**
6. promote open communication and constructive feedback among students during group activities.	3.58	VH	3.39	VH	**3.49**	**VH**
Average Weighted Mean	**3.55**	**Very High**	**3.33**	**Very High**	**3.44**	**Very High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 2.4 presents the perception on the level of teachers' cooperative learning in the science classroom in terms of stimulating interaction. Overall, the highest-rated statement was statement 6 "The teacher promotes open communication and constructive feedback among students during group activities," with a weighted mean of 3.49, described as "Very High." This suggests that promoting communication and feedback is the most emphasized aspect of stimulating interaction across all respondents. The lowest-rated statement was statement 1 "The teacher create opportunities for students to engage directly with one another in collaborative work," with a weighted mean of 3.37, described as "Very High," This reflects the importance teachers place on student interaction and teamwork in the laboratory setting, though it suggests that there may be slightly fewer structured opportunities for direct peer-to-peer collaboration compared to other aspects of group work. The overall average weighted mean was 3.44, described as "Very High," highlighting the strong focus on stimulating interaction in the science classroom, particularly through communication, feedback, and collaboration.

Additionally, Barrett et al. (2019) highlight how inadequate resources can hinder effective cooperative learning, which correlates with the slightly lower ratings for opportunities to engage directly with one another in group activities, suggesting that resource limitations might impact the full realization of collaborative potential in some classrooms.

Table 2.5. Perception on the Level of Teachers' Cooperative Learning in Science Classroom in terms of Individual Responsibility

Statements	Teachers		Students		Overall	
The teacher…	WM	VI	WM	VI	AWM	VI
1. ensure that students interact with each other to complete group activities.	3.63	VH	3.28	VH	**3.46**	**VH**
2. encourage each member of the group to take responsibility for their part in the work.	3.54	VH	3.40	VH	**3.47**	**VH**
3. motivate every group member to participate, even if they find the task difficult or unenjoyable.	3.54	VH	3.27	VH	**3.41**	**VH**
4. provide feedback on each student's individual contributions to group work.	3.51	VH	3.32	VH	**3.42**	**VH**
5. emphasize that each student is responsible for both their own learning and the overall success of the group.	3.48	VH	3.41	VH	**3.45**	**VH**
6. encourage students to evaluate their own performance as well as that of their group members.	3.48	VH	3.24	H	**3.36**	**VH**
Average Weighted Mean	3.53	**Very High**	**3.32**	**Very High**	**3.43**	**Very High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 2.5 presents the perception on the level of teachers' cooperative learning in the science classroom in terms of individual responsibility. Overall, the highest-rated statement was statement 2 "The teacher encourage each member of the group to take responsibility for their part in the work," with a weighted mean of 3.47, described as "Very High." This reflects a general agreement that teachers facilitate a collaborative environment where individual accountability is emphasized within group activities. The lowest-rated statement was statement 6 "The teacher encourages students to evaluate their own performance as well as that of their group members," with a weighted mean of 3.36, described as "Very High," indicating that while evaluation is an important aspect of individual responsibility, it could be given more emphasis. The overall average weighted mean was 3.43, described as "Very High," reflecting a strong perception of the importance of individual responsibility within cooperative learning in science classrooms.

This is consistent with Prieto-Saborit et al. (2022), who stressed that cooperative learning involves not only interaction but also individual accountability, which is reinforced through self and peer evaluations.

Table 3.1. Perception on the Level of Process Skills Acquisition of Learners In Terms of Observing

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can ask questions that require data collection.	3.27	VH	3.14	H	**3.21**	**H**
2. are able to collect and record data accurately.	2.67	H	3.08	H	**2.88**	**H**
3. can describe the data they gather.	2.69	H	2.91	H	**2.80**	**H**
4. are able to observe data both quantitatively and qualitatively.	2.77	H	3.02	H	**2.90**	**H**
5. provide detailed observations based on the gathered data.	2.70	H	3.11	H	**2.91**	**H**
Average Weighted Mean	**2.82**	**High**	**3.05**	**High**	**2.94**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.1 presents the perception on the level of process skills acquisition of learners in terms of observing. Overall, the highest-rated statement was statement 1 "The learner can ask questions that require data collection," with a weighted mean of 3.21, described as "High." This indicates that the ability to ask questions that lead to data collection is valued highly across both teachers and students. The lowest-rated statement was statement 3 "The learner can describe the data they gather." with a weighted mean of 2.80, described as "High," suggesting that while students can observe data in various ways, there may be room for improvement in the students capability in describing their gathered data. The overall average weighted mean was 2.94, described as "High," indicating that both teachers and students perceive learners to have a solid level of process skills in observing.

This aligns with literature on process skills acquisition in science, where both teachers and students highly value the ability to ask questions driving data collection (Kumar, 2023; Solomon, 2024). However, the lower ratings for "collecting and recording data accurately" reflect challenges in consistent application, as noted by Sadera et al. (2020) and Padilla (2020).

Table 3.2. Perception on the Level of Process Skills Acquisition of Learners In Terms of Measuring

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can perform the necessary computations for scientific investigations.	2.64	H	2.86	H	**2.75**	**H**
2. have the basic knowledge needed for measurements in scientific investigations, using appropriate tools or equipment.	2.78	H	3.05	H	**2.92**	**H**
3. are able to compare an object using a standard unit of measure.	2.81	H	2.98	H	**2.90**	**H**
4. can compare an object using a nonstandard measure.	2.91	H	2.70	H	**2.81**	**H**
5. are able to describe the dimensions of an object or event being studied.	2.96	H	2.84	H	**2.90**	**H**
Average Weighted Mean	**2.82**	**High**	**2.89**	**High**	**2.86**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.2 presents the perception on the level of process skills acquisition of learners in terms of measuring. Overall, the highest-rated statement was statement 2 "The learner have the basic knowledge needed for measurements in scientific investigations, using appropriate tools or equipment," with a weighted mean of 2.92, described as "High The overall average weighted mean was 2.86, described as "High," suggesting that both teachers and students perceive learners to have a good level of skills in measuring, though there is room for further improvement.

Padilla (2020) emphasizes that basic knowledge in measurements, such as using appropriate tools or equipment, is essential for developing science process skills. This is reflected in the high rating given by both teachers and students regarding students' ability to use the necessary tools and equipment for measurements.

Table 3.3. Perception on the Level of Process Skills Acquisition of Learners In Terms of Classifying

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can categorize subjects based on similarities and differences.	3.07	H	3.10	H	**3.09**	**H**
2. are able to classify terms in relation to each other.	2.96	H	3.05	H	**3.01**	**H**
3. can rank objects based on specific properties.	2.91	H	3.05	H	**2.98**	**H**
4. are able to classify information by identifying whether objects have or lack a particular property.	2.93	H	2.89	H	**2.91**	**H**
5. can group or order objects or events into categories based on specific criteria.	3.09	H	3.05	H	**3.07**	**H**
Average Weighted Mean	**2.99**	**High**	**3.03**	**High**	**3.01**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.3 presents the perception on the level of process skills acquisition of learners in terms of classifying. Overall, the highest-rated statement was statement 1 "The learner can categorize subjects based on similarities and differences," with a weighted mean of 3.09, described as "High." This suggests that both teachers and students agree that categorization based on similarities and differences is a key strength. The overall average weighted mean was 3.01, described as "High," reflecting that both teachers and students generally perceive learners to be proficient in classifying and categorizing information.

Padilla (2020) identifies classifying as a critical science process skill, involving the ability to organize objects or events based on shared properties. However, the lower rating regarding students' ability to classify information by identifying specific properties is consistent with the observations made by Asio and Mondejar (2022), who noted that students may struggle with certain aspects of classification, such as identifying and applying specific properties.

Table 3.4. Perception on the Level of Process Skills Acquisition of Learners In Terms of Inferencing

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can analyze a scientific problem using collected data.	2.80	H	2.86	H	**2.83**	**H**
2. are able to explain the results of a scientific investigation based on the collected data.	2.71	H	2.95	H	**2.83**	**H**
3. can make an "educated guess" about an object or event using previously gathered data or information.	2.65	H	2.88	H	**2.77**	**H**
4. use inferences based on the same observations.	2.69	H	2.98	H	**2.84**	**H**
5. are able to refine inferences as more data is collected, strengthening the study.	2.81	H	2.97	H	**2.89**	**H**
Average Weighted Mean	**2.73**	**High**	**2.93**	**High**	**2.83**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.4 presents the perception on the level of process skills acquisition of learners in terms of inferencing. Overall, the highest-rated statement was statement 5 "The learner are able to refine inferences as more data is collected, strengthening the study," with a weighted mean of 2.89, described as "High." This suggests that both teachers and students agree that refining inferences as more data is collected is a key strength. The lowest-rated statement was statement 3 "The learner can make an 'educated guess' about an object or event using previously gathered data or information," with a weighted mean of 2.77, described as "High," indicating that while students are capable of making educated guesses, further development may be needed in this area. The overall average weighted mean was 2.83, described as "High," reflecting that both teachers and students generally perceive learners to be proficient in making inferences, though there is still potential for improvement in certain aspects of this skill.

This corresponds with the emphasis on inquiry-based learning in the studies by Fajardo (2023) and Nunaki et al. (2020), who argue that refining inferences and adapting to new data are integral to the scientific method.

Table 3.5. Perception on the Level of Process Skills Acquisition of Learners In Terms of Communicating

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can communicate scientific procedures to others.	3.05	H	3.03	H	**3.04**	**H**
2. are able to create a presentation to share observations and data with others.	2.83	H	2.99	H	**2.91**	**H**
3. use information in a way that can easily relate to their personal experiences.	2.97	H	3.04	H	**3.01**	**H**
4. can use descriptive language that is easily understood by both peers and themselves.	3.02	H	3.14	H	**3.08**	**H**
5. communicate effectively with others by providing clear and understandable information.	3.02	H	3.26	VH	**3.14**	**H**
Average Weighted Mean	**2.98**	**High**	**3.09**	**High**	**3.04**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.5 presents the perception on the level of process skills acquisition of learners in terms of communicating. Overall, the highest-rated statement was statement 5 "The learner communicates effectively with others by providing clear and understandable information," with a weighted mean of 3.14, described as "High." This suggests that both teachers and students agree that effective communication is a key strength. The lowest-rated statement was statement 2 "The learner are able to create a presentation to share observations and data with others," with a weighted mean of 2.91, described as "High," indicating that further development may be needed in creating and delivering presentations. The overall average weighted mean was 3.04, described as "High," reflecting that both teachers and students generally perceive learners to be proficient in communication, though there is still potential for growth in certain aspects of this skill.

As noted by Fajardo (2023) and Norona (2021), the ability to effectively present data and observations is vital, and the development of this skill can be supported through more practice with presentation tools and techniques. Furthermore, the overall perception of communication skills being "High" supports the findings of Gizaw and Sorsa (2023), who highlight that student-centered teaching methods, such as collaborative learning and inquiry-based activities, can foster stronger communication abilities by encouraging students to articulate their thoughts and share findings with peers.

Table 3.6. Perception on the Level of Process Skills Acquisition of Learners In Terms of Hypothesizing

Statements	Teachers		Students		Overall	
The learner…	WM	VI	WM	VI	AWM	VI
1. can create models to explain scientific results.	2.71	H	2.86	H	**2.79**	**H**
2. use the results of a scientific study to answer questions related to a given problem.	2.79	H	3.07	H	**2.93**	**H**
3. are able to form hypotheses based on accurate observations and inferences about events.	2.69	H	2.90	H	**2.80**	**H**
4. can construct, modify, and even reject hypotheses based on new observations.	2.69	H	2.87	H	**2.78**	**H**
5. hypothesize based on constructed, modified, and even rejected hypotheses based on fresh observations.	2.83	H	2.85	H	**2.84**	**H**
Average Weighted Mean	**2.74**	**High**	**2.91**	**High**	**2.83**	**High**

Legend:

Interval	Verbal Interpretation (VI)
3.25-4.00	Very High (VH)
2.50-3.24	High (H)
1.75-2.49	Low (L)
1.00-1.74	Very Low (VL)

Table 3.6 presents the perception on the level of process skills acquisition of learners in terms of hypothesizing. Overall, the highest-rated statement was statement 2 "The learner uses the results of a scientific study to answer questions related to a given problem," with a weighted mean of 2.93, described as "High." This suggests that both teachers and students agree that applying results to problem-solving is a notable strength among learners. The lowest-rated statement was statement 4 "The learner can construct, modify, and even reject hypotheses based on new observations," with a weighted mean of 2.78, described as "High," highlighting a potential area for growth. The overall average weighted mean was 2.83, described as "High," reflecting that both teachers and students generally perceive learners to be proficient in hypothesizing.

This is consistent with the findings of Fajardo (2023) and Asio & Mondejar (2022), which emphasize the importance of providing students with opportunities to refine their hypotheses through inquiry-based learning. By integrating more hands-on experiments and fostering an environment where students can actively revise their hypotheses, both teachers and students can strengthen this process skill.

Table 4. Test of Association Between the Learners' Process Skills Acquisition and Their Profile

Variables		X^2	df	p-value	Interpretation
Process Skills Acquisition of Learners	Age	32.60	4	<.001	Significant
	Sex	0.083	2	0.959	Not Significant
	Grade Level	73.20	10	<.001	Significant

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

Table 4 presents the test of association between the learners' process skills acquisition and their profile. The results revealed that there is a significant association between the learners' process skills and their profile in terms of age, $X^2(4, N=230)=32.60$, $p<.001$, and grade level, $X^2(10, N=230)=73.20$, $p<.001$. This suggests that as students mature and progress through the curriculum, their scientific thinking and skills improve. However, there is no significant association between the learners' process skills acquisition and their sex profile, $X^2(2, N=230)=0.083$, $p=0.959$. This shows that there is no substantial difference between males and females in how they develop science process skills.

This aligns with Padilla (2020) and Fajardo (2023), who highlighted that higher grade levels lead to improved mastery of process skills. However, no significant association was found between process skills acquisition and sex, indicating that both male and female students develop these skills at similar rates. This supports findings by Nunaki et al. (2020), which showed no gender-based differences in science skills development.

Table 5. Linear Regression Analysis Results to Determine Significant Predictors of Learners' Process Skills Acquisition

Predictors	B	Beta	t	p	Interpretation
Readiness of Science Facilities	0.489	0.428	7.80	<.001	Significant
Teachers' Cooperative Learning	0.309	0.407	7.43	<.001	Significant
Constant	0.520		3.40	<.001	

Notes: F(2, 227)=141.00, p<.001; R-square=0.554, Adjusted R-square=0.550

Table 5 shows a summary of the linear regression analysis. The results revealed that the readiness of science facilities (B=0.489, p<.001) and the cooperative learning of teachers (B=0.309, p<.001) emerged as the significant predictors of learners' science process skills acquisition, $F(2, 227) = 141.00$, $p < .001$, accounting for 55.40% of the variance in learners' science process skills acquisition ($R^2 = 0.554$, Adjusted $R^2 = 0.550$). This indicates that better-equipped and well-maintained science labs enhance students' ability to perform scientific processes like observing, measuring, and hypothesizing.

Barrett et al. (2019) emphasize that well-equipped science facilities are crucial for effective learning, as inadequate resources hinder student engagement and skill development. Similarly, Gillies (2020) and Prieto-Saborit et al. (2022) highlight the positive impact of cooperative learning on critical thinking, problem-solving, and collaboration, key skills necessary for scientific inquiry. The emphasis on social skills and group processing, as noted by Sander and Watkins (2022) and Balgopal et al. (2024), further reinforces the importance of collaborative teaching approaches in fostering the acquisition of science process skills.

Table 6. Test of Relationship Between the Teachers' Cooperative Learning and the Readiness of Science Facilities

Variables		r	df	p-value	Interpretation	Decision
Cooperative Learning of Teachers	Readiness of Science Facilities	0.588	228	<.001	Significant	Reject H_0

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

Table 6 discloses the results of the test of relationship between teachers' cooperative learning and the readiness of science facilities. The findings revealed that there is sufficient evidence to conclude that there was a significant relationship between the readiness of science facilities and the teachers' cooperative learning, r(228)=0.588, p<.001, leading to the rejection of the null hypothesis. The significant relationship between lab readiness and cooperative learning means that a supportive, well-equipped environment allows teachers to more effectively implement collaborative instructional strategies. Inadequate facilities may discourage the use of group activities due to space, material, or logistical constraints.

According to Gillies (2020), cooperative learning enhances teaching by fostering collaboration and active engagement among teachers, which is facilitated by a well-equipped learning environment. Prieto-Saborit et al. (2022) also emphasize that positive interdependence and group processing in cooperative learning thrive in supportive settings with adequate resources. This aligns with the findings of Barrett et al. (2019), who noted that improved school facilities lead to better collaborative teaching practices.

CONCLUSION

This study finds that while public school science laboratories in Guindulman are generally "Ready" in fostering student cohesiveness, involvement, and rule clarity, they face deficiencies in equipment, space, and air quality. These limitations hinder optimal learning conditions, yet lab readiness still significantly enhances teachers' cooperative learning strategies and students' acquisition of key science process skills—particularly observing, measuring, and communicating. Additionally, students' age and grade level play a crucial role in skill development, underscoring the need for age-appropriate lab experiences. To maximize scientific competency, targeted upgrades in lab facilities, coupled with strengthened teacher collaboration, are essential. Strategic investments in infrastructure and training will directly improve science education outcomes in Guindulman.

REFERENCES

Anto, I. J. C., Buagas, I. R. A., Ong, P. M. V. J., Naparan, G. B., & Villaver, A. V. (2023). Challenges and coping strategies of science teachers. Canadian Journal of Educational and Social Studies, 3(4), 148–166. https://doi.org/10.53103/cjess.v3i4.168

Asio, J. M., & Mondejar, H. C. (2022). Students' level of science process skills acquisition and academic achievement during the pandemic. Central Mindanao University Journal of Science, 26(2). https://doi.org/10.52751/zfhg2128

Balgopal, P., Pathare, S., & Balgopal, M. M. (2024). Group process. Springer Series in International Social Work, 143–169. https://doi.org/10.1007/978-981-97-3806-9_11

Barrett, P., Treves, A., Shmis, T., Ambasz, D., & Ustinova, M. (2019). The impact of school infrastructure on learning: A synthesis of the evidence. https://documents1.worldbank.org/curated/en/853821543501252792/pdf/132579-PUB-Impact-of-School.pdf

Fajardo, M. T. (2023). Fostering science process skills: Strategies and issues. Science International, 35 (4), 461–465.

Foster, C. B. (2020). Cooperative learning and how to use it in the classroom. TeachHUB. https://www.teachhub.com/teaching-strategies/2020/07/cooperative-learning-and-how-to-use-it-in-the-classroom/

Gillies, R. M. (2023). Using cooperative learning to enhance students' learning and engagement during inquiry-based science. Education Sciences, 13(12), 1242–1242. https://doi.org/10.3390/educsci13121242

Gizaw, G., & Sota, S. S. (2023). Improving science process skills of students: A review of literature. Science Education International, 34(3), 216–224. https://doi.org/10.33828/sei.v34.i3.5

Kumar, P. (2023). Enhancing scientific inquiry: The role of process skills in science. Teachers Institute. https://teachers.institute/pedagogy-of-science/scientific-inquiry-process-skills/

Mncube, D. W., Ajani, O. A., Ngema, T., & Mkhasibe, R. G. (2023). Exploring the problems of limited school resources in rural schools and curriculum management. UMT Education Review, 6(2), 1–31. https://doi.org/10.32350/uer.62.01

Norona, R. (2021). Status of laboratory resources and science process skills of grade 11 learners in the division of Eastern Samar, Philippines. TARAN-AWAN Journal of Educational Research and Technology Management, 2(1), 46–59. https://journal.evsu.edu.ph/index.php/tjertm/article/view/260

Nunaki, J. H., Siagian, S. I. R., Nusantari, E., Kandowangko, N. Y., & Damopolii, I. (2020). Fostering students' process skills through inquiry-based science learning implementation. Journal of Physics: Conference Series, 1521(4), 042030. https://doi.org/10.1088/1742-6596/1521/4/042030

Padilla, M. J. (2020). The science process skills. Narst.org. https://narst.org/research-matters/science-process-skills

Prieto-Saborit, J. A., Méndez-Alonso, D., Ordóñez-Fernández, F., & Ramón Bahamonde, J. (2022). Validation of a cooperative learning measurement questionnaire from a teaching perspective. Psicothema. https://doi.org/10.7334/psicothema2021.126

Sadera, J. R. N., Torres, R. Y. S., & Rogayan, Jr., D. V. (2020). Challenges encountered by junior high school students in learning science: Basis for action plan. Universal Journal of Educational Research, 8(12A), 7405–7414. https://doi.org/10.13189/ujer.2020.082524

Sander, V., & Watkins, N. (2022). What are social skills? (Definition, examples & importance). SocialPro. https://socialself.com/blog/social-skills-definition/

Solomon, S. (2024). Cooperative learning: Teaching strategy. TeacherVision. https://www.teachervision.com/professional-development/cooperative-learning

Sykora, K. (2022). Importance of science labs in education. OnePointe Solutions. https://www.onepointesolutions.com/blog/importance-of-science-labs-in-education/

ACADEMIC PROCRASTINATION EFFECT ON STUDENTS' SELF-REGULATION, SOCIAL SUPPORT, AND ACHIEVEMENT

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ABSTRACT

The core purpose of this study was to evaluate the effects of academic procrastination of students on self-regulation, social support, and achievement of MAED-EM students in Bohol Island State University, Candijay Campus, academic year 2024-2025. The descriptive survey method of research, particularly descriptive correlational survey design, was employed with an enhanced questionnaire distributed to fifty-eight respondents. This study employed simple random sampling in this study to deliberately select respondents in the Master of Arts in Education major in Educational Management (MAED-EM) students at Bohol Island State University. This technique was utilized for each student in the population had an equal and independent chance of being selected, ensuring that the sample was representative and free from selection bias with this specific academic group. It was found that there is no significant association between the students' academic procrastination and the profile of the respondents in terms of civil status, sex, age, year level, designation position, and number of years in teaching. This concludes that procrastination is likely caused by other factors not related to their basic personal background. However, it was found that there is a significant negative relationship between students' academic procrastination and self-regulation. This concludes that students who have higher self-regulation tend to procrastinate less. Moreover, the procrastination can negatively affect how well students do in their academic tasks. Additionally, students with higher self-regulation tend to perform better academically and were not much affected by procrastination or showed that they were suffering from it, as they still track their progress towards meaningful success; however, there was still a need for interventions to address and aid the other, seemingly minimal deficiencies.

Keywords: Academic Achievement, Academic Procrastination, Self-regulation, and Social Support

INTRODUCTION

Learners around the globe are undeniably suffering from academic procrastination in certain ways. Procrastination is a psychological phenomenon that impacts individuals across all levels of intelligence, motivation, and intention. This is a common behavior of students but in alarming and disruptive bad deeds; in fact, 2024 procrastination rates have risen to troubling levels worldwide, underscoring the urgency to address and combat this destructive habit. Students must break free from the cycle of procrastination to unlock their full academic potential. Shabiha (2022) defined procrastination as a widespread phenomenon generally among college students, driven more by personality traits and the temptation to prioritize leisure over hard work, rather than a fear of failure. When students repeatedly delay tasks in school or work, it can become a habitual behavior, making it difficult for them to meet their personal goals or stay on track with responsibilities

According to Procrastination Statistics and Facts 2024: Shocking Truths, the study indicates that between 80% and 95% of college students procrastinate to some degree. Additionally, 60-75% of first-year college students report studying less than 10 hours per week, with only 5% studying more than 20 hours. Among high school students, 50% acknowledge procrastination as their bad habit, and 86% admit to delaying assignments. This suggests that procrastination has a higher rate among college and university students than among high school students (Della Ventura, 2024).

According to Mecmack Nartea et al. (2020), their study in the National Capital Region (NCR) found that respondents exhibited a moderately high level of academic procrastination. The findings also indi-

cated that the authoritative parenting style was the most prevalent among the respondents. Furthermore, the study revealed a significant correlation between academic procrastination and students' academic performance across various state universities and colleges in the NCR. In St. Louise de Marillac College of Sorsogon City, in the Philippines, according to a researcher, Abiera (2024) that academic procrastination has been an alarming problem lately in Matnog National High School since students had a severe procrastination level revealed in their studies.

The researcher conducted this study to explore the extent of habitual academic procrastination among students being tied up despite its negative impact on academic performance, focusing on understanding the factors that influence procrastination, specifically self-regulation, social support, and academic achievement, among master's (MAEd-EM) students in Bohol Island State University.

Academic procrastination is characterized by students purposely delaying or postponing their academic responsibilities or assigned tasks, according to the study of (Arifiana et al., 2021; Dahl et al. 2020; Hooda & Saini, 2016).

Also, according to Macias et al. (2018), academic procrastination is a significant variable within the educational system that influences student retention and their persistence in academic institutions. Moreover, it harms students' psychological well-being and academic performance.

In addition, according to another related study, academic procrastination is a widespread issue in colleges and universities, where students often face challenges in meeting academic requirements. These include tasks such as studying for exams, writing term papers, and completing assignments and readings, all of which must be finished within a specific time frame (Malkoc & Mutlu, 2018; Laili & Patria, 2021). Studies in Latin America found that about 61% of people experience some form of procrastination, with 20% doing so regularly. This behavior is common and affects various areas of life, including work, health, and education (Castillo et al., 2023).

On the other hand, Gracia et al. (2020) and Ojo (2019) stated that academic procrastination brings significant problems to students and affects them. Students may experience elevated stress, bad sleep, limited time to do assignments, uncertainty, blaming oneself, stunted self-esteem, unease, and sadness due to academic procrastination (Gracia et al., 2020), which would result in disruptive academic outcomes such as poor academic achievement and work quality; lack of knowledge; time; academic pressure; suspension or dropout; and longer course of study (Blankenship & Jones, 2021; Craig et al., 2019).

This leads to disruptive academic outcomes, including poor academic performance, subpar work quality, insufficient knowledge, time mismanagement, heightened academic pressure, increased rates of suspension or dropout, and extended time to complete a course of study (Blankenship & Jones, 2021; Craig et al., 2019). However, according to Haider et al. (2022), because of this destructive problem, students face serious self-esteem and health issues.

According to Bhat and Jan (2023), in their previous studies conducted on a sample of Vietnamese university students, because of doing the task under time pressure, the learners experience stress, frustration, and anger that leads to a decrease in levels of academic satisfaction. Baars et.al (2019) studies revealed that self-regulated learning has a big impact on assisting learning to attain academic achievement.

Furthermore, according to Haider et al. (2020), students who have high self-efficacy are students who frequently do not procrastinate than those with low self-efficacy, and academic procrastination negatively affects learners' self-esteem. Learners who are have disciplined on their self-regulation are all aware of their academic responsibilities such as giving importance to their activities, showing personal involvement in the learning process and outcomes, managing and adjusting to any assigned task, they defined self-regulation as a practice of being independent and self-directed learners according to the studies of Robson et. al (2020).

On the other hand, Batbaatar (2021) cited that students procrastinate due to distractions, social media addiction, poor internet connections, and mental health problems are blamed for poor academic achievement.

Study to Dr. Thangavel (2024), he stated that students with low and high levels of academic procrastination have found significantly different academic achievements; males experienced procrastination rather than females in their academic work. He added that academic procrastination is the mediating factor between academic stress and academic success.

Borekei and Uyangor (2018); Korkmaz et al., (2018); Asri et al., (2017) in their studies make similar claims that academic procrastination is harmful to students' school performance and it lowers academic achievement. Nevertheless, according to Najam et al. (2022) that academic achievement has two pre-

dictors, which are academic self-efficacy and self-motivation, where academic achievement has a relationship to academic procrastination.

Yared Fentaw et al., (2022) in their studies on the effects of academic procrastination on focus group participants reported that academic procrastination tends to decrease their academic achievement and self -confidence, cause stress, cheating, boredom, and despair. Learners who postpone academic activity face several problems that lower their academic scores, including active examination anxiety and the development of anxiety.

The Attribution Theory, developed by Heider (1958), is the hypothesis that examines the individual's motivations through analysis of their success and failures. This hypothesis is relevant for a research study on academic procrastination, which impacts the motivation levels because it demonstrates the high and low performers' place on the task. for instance, High Achievers will push through tasks that will improve their skills to succeed rather than avoiding the task.

The theory of Temporal Motivation Theory (2007), founded by Steel & Konig, also known as "The Procrastination Equation," highlights the significance of time as it is considered a critical and motivational factor, and it considered the individual's self-efficacy, deadline, time, capacity for planning and motivation.

The TMT proposed a formula to analyze procrastination as a quantitative product: Motivation = (Expectancy x Value) / {1 + (Impulsiveness ×Delay)}. The equation explains how the expectations and values that decrease due to delay affect the motivation to accomplish a task. This applies not just to academic procrastination but also to procrastination in general.

If a person can manage time effectively, it has a great impact to individuals, which reduces cognitive overload, lowers anxiety and pressure, and improves productivity and results according to Ahmad (2020).

CHED Memorandum Order No. 59, s. 1996 or other known as "Policies and Guidelines for the Establishment of Academic Support Centers" states that this center should support students' learning needs, including tutoring, mentoring, and counseling services, address to all higher education institutions. The memorandum encourages the establishment center to assist learners, especially in overcoming academic procrastination through academic assistance and psychological support.

STATEMENT OF THE PROBLEM

This study aimed to evaluate the effects of academic procrastination on self-regulation, social support, and academic performance among MAED-EM students at Bohol Island State University – Candijay Campus during the academic year 2024–2025.

Specifically, it sought to answer the following research questions:

1. What is the profile of the respondents in terms of the following variables?
   1.1 civil status;
   1.2 sex;
   1.3 age;
   1.4 year level;
   1.5 designation or position; and
   1.6 number of years in teaching?
2. What is the respondents' perception of the academic procrastination of MAED-EM students?
3. What is the respondents' perception of the self-regulation of MAED-EM students?
4. What is the respondents' perception of the social support received by MAED-EM students?
5. Is there a significant association between academic procrastination and the profile of MAED-EM students?
6. Does academic procrastination significantly predict the self-regulation of MAED-EM students?
7. Does academic procrastination significantly predict the social support of MAED-EM students?
8. Does academic procrastination significantly predict the academic performance of MAED-EM students?
9. What recommendations or actions can be proposed based on the findings of this study?

RESEARCH METHODOLOGY

This study was a quantitative descriptive survey method of research, particularly a correlational survey design, to determine the effect of academic procrastination of students on self-regulation, social support, and achievement during the academic year 2024-2025.

It was conducted in the Bohol Island State University, Candijay, Campus. This location is situated in Cogtong, Candijay, Bohol.

The study primarily focused on the effect of academic procrastination of students on self-regulation, social support, and achievement, targeting all MAED-EM students as participants; however, there were only 58 student-respondents who responded in BISU-Candijay, Bohol.

RESULTS AND DISCUSSION

The treated data revealed the following findings:

Table 1 shows the demographic profile of masteral students in terms of civil status, sex, age, year level, position, and number of years in teaching.

The table depicts the civil status of the master's students in BISU Candijay, Campus. The information exhibited that twenty-four (32) or 55.2% were married, nineteen (25) or 43.1% were singles, one (1) or 1.7 % were solo parents, and zero (0) or 0% were widowed. It can be indicated that the teacher-respondents pursuing a master's degree are predominantly composed of married individuals.

As to sex, of the master's students in the BISU Candijay Campus. The information exhibited that forty-two (54) or 93.1% were females, and the males, on the other hand, were two (4) or 6.9 %. It can be implied that there was a notable gender disparity in the teaching profession, with it being perceived as a more appealing career option for females than males.

Table 1. Profile of the MAED-EM Respondents

1.1 Civil Status	**f**	**%**	**Rank**
Single	25	43.1	2
Married	32	55.2	1
Widowed	0	0	
Solo Parent	1	1.7	3
Total	58	100 %	
1.2 Sex			
Male	4	6.9	2
Female	54	93.1	1
Total	58	100%	
1.3 Age			
18 – 22	0	0	
23 – 27	21	36.2	2
28 – 32	16	25.9	3
33 years old and above	26	37.9	1
Total	58	100%	
1.4 Year Level			
1st year	15	25.9	2.5
2nd year	15	25.9	2.5
3rd year	5	8.6	4
4th year	23	39.7	1
Total	58	100 %	
1.5 Position			
Teacher I	22	37.9	1
Teacher II	0	0	
Teacher III	9	15.5	4
Teacher IV	0	0	
Private School Teacher	13	22.4	2
ESL Teacher	4	6.9	5
Others	10	17.2	3
Total	58	100%	
1.5 Number of years in teaching			
1-5 years	37	63.2	1
6-10 years	13	22.8	2
11-15 years	4	7	3.5
16 years and above	4	7	3.5
Total	58	100%	

As it was shown in the table, 39.7 % or twenty-three (23) of the MAEd-EM students of the total respondents were fourth year, 25.9% or fifteen (15) were second year and first year, and approximately 8.6% or five (5) were third year. It can be implied that there is a significant portion of students who are nearing the end of their academic journey. This could indicate that most students are progressing well through the master's program and may have accumulated substantial knowledge and experience.

The table presents the positions or designations of the master's students' respondents. The most common position is T1 (Teacher one), with twenty-two (22) representing 37.9% of the respondents and ranking first. Followed by, Private School Teacher with thirteen (13) or 22.4%, Others with ten (10) or 17.2%, T3 (Teachers three) with nine (9) or 15.5, ESL Teacher with four (4) or 6.9% and the least common position were Teacher II and IV, both with zero (0) or % holding these positions. This indicated that the majority of the respondents are in early stages of their teaching careers, pursuing master's degrees in education may be seeking to improve their qualifications and skills to advance in their professional roles.

About the respondents' number of years in teaching, the most common experience among the respondents was 1-5 years in teaching, representing 63.2% or thirty-seven (37) of the total, and ranking first. Second was 6-10 years in teaching, with 22.8% or thirteen (13) respondents. Followed by, the least represented was 11-15 years and 16 years and above in teaching, with 7% or four (4) respondents. This implies that the high percentage of early-career teachers may also suggest a strong interest in professional development and a desire to improve teaching skills at the outset of their careers.

Table 2 presents the respondents' perceptions on academic procrastination of master's students of Bohol Island State University, Candijay Campus. The weighted mean of all statements regarding academic procrastination for respondents falls on the descriptive interpretation "High," which means the level of academic procrastination mentioned was Highly Observed.

Table 2. Respondents' Perception on Academic Procrastination

Statements	MAEd-EM Students		
	WM	DI	Rank
I tend to overcome procrastination when….			
Tests are meant to be studied for the night before	2.45	D	5
I feel well prepared in advance for more tests	3.12	A	3.5
"Cramming" and last-minute studying are the best ways that I study for a big test	1.93	D	10
I allocate time so I don't have to "cram" at the end of the semester	3.52	SA	1
. I put off important projects until the last minute	2.1	D	9.5
I don't spend much time studying school material until the end of the semester	2.1	D	9.5
I read the textbook and look over notes before coming to class and listening to a lecture or teacher	3.12	A	3.5
I know I should work on school work or projects, but I just don't do it	2.29	D	7
I find myself waiting until the day before to start a big project	2.34	D	6
I usually allocate time to review and proofread my work to be well-prepared for the big exams	3.26	A	2
Average Weighted Mean	**2.62**	**Agree**	

Legend:

Rating Scale	**Description Interpretation**
3.25 – 4.00	Strongly Agree (SA) -Very High (VH)
2.50 – 3.24	Agree (A) -High (H)
1.75 – 2.49	Disagree (D) -Fair (F)
1.00 – 1.74	Strongly Disagree (SD)-Poor (P)

Based on the respondents' perceptions on academic procrastination, with an overall weighted mean of 2.62 interpreted as Agree. The statement "I allocated time so I don't have to "cram' at the end of the semester" were getting 3.52 the highest weighted mean. On the other hand, the least weighted mean of 1.93 was the statement "cramming and the last-minute studying is the best way that I study for a big test". This indicates that most respondents do not prefer or believe in cramming as an effective study

method which as the majority of participants tend to value and practice time management over procrastination.

Table 3 depicts the perceptions of respondents on self-regulation. Several items fell under "Disagree," which meant fairly observed. Nevertheless, all average weighted means fell under "High," which meant Highly Observed behaviors of Master of Arts in Education major in Educational Management students in BISU-Candijay, Campus.

Table 3 Respondents' Perception on Self-Regulation

Statements	MAEd-EM Students		
	WM	DI	Rank
I tend to overcome procrastination when….			
1. I usually keep track of my progress toward my goals	3.34	SA	1
2. I get easily distracted from my plans	2.52	A	6
3. I don't notice the effects of my actions until it's too late	2.29	D	8
4. It's hard for me to see anything helpful about changing my ways	2.39	D	7
5. I have so many plans that it's hard for me to focus on any one of them.	2.55	D	5
6. It's hard for me to notice when I've "had enough" (alcohol, food, sweets).	2.09	D	9
7. Most of the time I don't pay attention to what I'm doing.	2.07	D	10
8. I am able to resist temptation.	2.84	A	3
9. I can stick to a plan that's working well.	3.22	A	2
10. I can come up with lots of ways to change, but it's hard for me to decide which one to use.	2.71	A	4
Average Weighted Mean	**2.60**	**Agree**	

Legend:

Rating Scale	**Description Interpretation**
3.25 – 4.00	Strongly Agree (SA) -Very High (VH)
2.50 – 3.24	Agree (A) -High (H)
1.75 – 2.49	Disagree (D) -Fair (F)
1.00 – 1.74	Strongly Disagree (SD)-Poor (P)

The master's students observed the statement "I usually keep track of my progress toward my goals" with the highest weighted mean of 3.34. While "Most of the time I don't pay attention to what I am doing" got the least weighted mean of 2.07, it fell under "Disagree" or Fairly Observe." The overall weighted mean on the respondent's perceptions of Academic Procrastination on Self-Regulation is 2.60, which is interpreted as "Agree". Therefore, the findings revealed that they have a positive mindset towards personal growth and attentiveness in their academic endeavors.

According to Jaidumrong et.al. (2023), their studies revealed that the development of a mindset and academic success significantly correlate; they showed the value of helping students to develop a growth mindset that offers educational regulations to create a supportive learning environment. They added that the cultivation of a growth mindset results ultimately for academic improvement.

Table 4 shows the respondents perception on Social Support. All weighted means fell on descriptive interpretation "High," which meant the competencies were highly observed by the respondents.

According to the responses, the highest weighted mean was 3.57 on the statement "I think about financial status." These findings suggest that financial considerations play a significant role in their decision-making. On the other hand, the lowest weighted mean was 2.19, it states that "I give in to peer pressure easily like on weekends, I plans to do homework and projects, but I get distracted and hang-out with friends" indicates that the respondents so not frequently give in to peer pressure or distractions. Overall weighted mean on the levels of academic procrastination on Social Support is 2.79, which is interpreted as "Agree"; the findings suggest that respondents prioritize their financial awareness and are generally able to resist distractions, particularly those related to social pressures.

Table 4 Respondents' Perception on Social Support

Statements	MAEd-EM Students		
	WM	DI	Rank
I tend to overcome procrastination when….			
1.My parents are always supporting me in my studies emotionally and physically	3.50	SA	2
2. I think about financial status	3.57	SA	1
3. My parents remind me about my delayed task	3.0	A	3
4. My parents give reward of my accomplishments	2.97	A	4
5. I always have time to bond with my peer instead answering my tasks	2.31	D	9.5
6. I wait for my classmate's presentation to learn how to prepare my work	2.47	A	7
7. I give in to peer pressure easily like on week-ends, I plans to do homework and projects, but I get distracted and hang-out with friends	2.19	D	10
8. I find it hard to concentrating in my studies when I get hooked in social media community platform	2.69	A	6
9.I am not distracted from my studies when I found myself watching bloggers	2.31	D	9.5
10.I usually take care of entire task I have to do before I open my social media account to do stuffs like chatting with friends and etc.	2.93	A	5
Average Weighted Mean	**2.79**	**Agree**	

Legend:

Rating Scale	**Description Interpretation**
3.25 – 4.00	Strongly Agree (SA) -Very High (VH)
2.50 – 3.24	Agree (A) -High (H)
1.75 – 2.49	Disagree (D) -Fair (F)
1.00 – 1.74	Strongly Disagree (SD)-Poor (P)

According to Moneva et.al., (2020), their findings revealed that students feel satisfied when their parents/guardians have enough financial support for their studies and persist that they can pass on time or ahead of time, make a presentable works, and produce excellent output if they have the enough financial aid support. On the other hand, it showed that the financial support aspect can also impact students why they tendency to procrastinate.

Table 5 Respondents' Academic Achievement

Rating	Description	Frequency	Percentage
1.2 – 1.0	Excellent	11	18.97
1.5 – 1.3	Very Satisfactory	47	81.03
	Total	**58**	**100%**

Mean = 1.34; SD = 0.10

Table 5 presents the academic achievement of students enrolled in the Master of Arts in Education major in Educational Management (MAED-EM). The data indicate that the majority of students (n = 47, 81.03%) obtained a general weighted average within the range of 1.5 to 1.3, which corresponds to the description "Very Satisfactory." In contrast, 11 students (18.97%) achieved ratings within the 1.2 to 1.0 range, categorized as "Excellent." Notably, no student received ratings classified as "Satisfactory," "Fair," "Good," or "Failed." These results suggest that all students performed at a high academic level, with no one falling below the "Very Satisfactory" classification. The mean grade of 1.34 and a standard deviation of 0.10 further support the notion that student performance is consistently high in terms of their academic achievement.

Table 6 presents the test of association between the academic procrastination of MAED-EM students and their demographic profile. The results revealed no significant association between the students' procrastination and profile in terms of civil status, $X^2(2, N=58)=0.948$, $p=0.622$, sex, $X^2(2, N=58)=1.31$, $p=0.518$, age, $X^2(4, N=58)=6.06$, $p=0.195$, and year level, $X^2(6, N=58)=12.00$, $p=0.062$, implying that the tendency to procrastinate academically is not affected by whether a student is male or female, young

or old, single or married, or in a particular year level. This means that procrastination is likely caused by other factors not related to their basic personal background.

Table 6 Test of Association Between the Students' Academic Procrastination and Demographic Profile

Variables		X^2	df	p-value	Remarks
Academic Procrastination	Civil Status	0.948	2	0.622	Not Significant
	Sex	1.31	2	0.518	Not Significant
	Age	6.06	4	0.195	Not Significant
	Year Level	12.00	6	0.062	Not Significant

**Correlation is significant at 0.05 level*

Bhat and Jan (2023) examined specifically the influence of gender, and it was found that gender differences exhibit varying levels of procrastination. The findings suggest the need for gender-sensitive interventions and support mechanisms to address the challenges that students face. Another study found that academic procrastination negatively impacts the academic performance of which showed that mostly men were observed performing academic procrastination than women (Journal of Educators Online).

The findings indicate that it has differences in the results, where it showed that it depends on the educational setting.

Table 7 presents the summary of the regression analysis conducted to examine whether academic procrastination significantly predicts students' self-regulation. The results revealed that academic procrastination is a statistically significant predictor, F (1, 56) = 11.50, p = .001, accounting for 17% of the variance in students' self-regulation (R^2 = .170; adjusted R^2 = .155). The negative regression coefficient (B = -0.453, p = .001) indicates that higher levels of academic procrastination are associated with lower levels of self-regulation. This finding implies that students who tend to procrastinate more academically are less likely to effectively regulate their own learning behaviors, such as setting goals, managing time, and maintaining focus. The inverse relationship highlights the detrimental impact of procrastination on students' capacity to take control of their academic responsibilities.

Table 7 Regression Analysis Summary for Academic Procrastination as Predictor of Students' Self-Regulation

Predictor	B	Beta	t	p	Interpretation
Academic Procrastination	-0.453	-0.413	3.39	0.001	Significant
Constant	1.415		4.01	<.001	

Notes: F (1, 56) =11.50, p=0.001; R-square=0.170; Adjusted R-square=0.155

According to Lourenco and Paiva (2024), their research findings revealed that students who manage their time well and stay motivated tend to be better at self-regulating their learning, while those who procrastinate struggle more with staying on track. They conclude that a student who genuinely values their school work, takes accountability for their learning, and manages their time thoughtfully they're naturally setting themselves up for academic excellence.

Table 8 Regression Analysis Summary for Academic Procrastination as a Predictor of Students' Social Support

Predictor	B	Beta	t	p	Interpretation
Academic Procrastination	-0.720	-0.498	4.29	<.001	Significant
Constant	0.906		2.05	0.045	

Notes: F(1, 56)=18.40, p<.001; R-square=0.248; Adjusted R-square=0.234

Table 8 shows the summary of the regression analysis conducted to examine whether academic procrastination significantly predicts students' social support. The results revealed that academic procrastination is a statistically significant predictor, F(1, 56) = 18.40, p < .001, accounting for 24.8% of the variance in students' perceived social support (R^2 = .248; adjusted R^2 = .234). The negative regression coefficient (B = -0.720, p < .001) indicates that higher levels of academic procrastination are associated with lower levels of perceived social support. This finding suggests that students who frequently engage in academic procrastination may also experience diminished levels of emotional, instrumental, or informational support from peers, family, or academic mentors.

Tanuja Bhatt (2023) found out that putting off schoolwork doesn't just hurt students' grades—it also takes a toll on their well-being. She explained that students who procrastinate often end up stuck in a stressful cycle of anxiety and low performance, which can hold them back both academically and personally.

Additionally, according to Kim and Seo (2015) in their published article, a meta-analysis showed that procrastination is linked to lower academic performance. In other words, students who often delay their work tend to get poorer results. This makes sense if someone puts off writing an assignment and ends up submitting it late or rushed, lower grades are often the natural outcome that impacts their academic achievement.

Table 9 presents the summary of the regression analysis conducted to examine whether academic procrastination significantly predicts students' academic achievement. The results revealed that academic procrastination is a statistically significant predictor, $F(1, 56) = 8.96$, $p = .004$, accounting for 13.8% of the variance in students' academic achievement ($R^2 = .138$; adjusted $R^2 = .123$). The negative regression coefficient ($B = -0.126$, $p = .004$) indicates that higher levels of academic procrastination are associated with lower academic achievement. This finding supports the notion that procrastination undermines students' ability to perform well academically, likely due to delays in study preparation, rushed task completion, and increased stress. As students procrastinate, they may compromise the quality of their work and limit opportunities for feedback and reflection, which are essential to academic success. The moderate yet significant effect highlights the importance of addressing procrastination not only as a time-management issue but also as a factor that directly influences learning outcomes.

Table 9 Regression Analysis Summary for Academic Procrastination as Predictor of Students' Academic Achievement

Predictor	B	Beta	t	p	Interpretation
Academic Procrastination	-0.126	-0.371	2.99	0.004	Significant
Constant	1.67		15.02	<.001	

Notes: F(1, 56)=8.96, p=0.004; R-square=0.138; Adjusted R-square=0.123

According to Sahranavard et. al., (2018) on their written article stated that findings showed that they came up with the same findings that there is a significant correlation between self-regulation and educational performance among students of Payame Noor University.

Santika et al. (2025) emphasize that self-regulated learning (SRL) is a key skill that helps students take charge of their education by setting goals, tracking their progress, and reflecting on their learning. Their research also shows how technology can support SRL by offering tools for better feedback, personalized learning, and progress tracking. To truly encourage student independence, they suggest giving students proper training, supporting teachers with professional development, and updating the curriculum to overcome cultural and system-wide challenges. Overall, their goal is to create more inclusive and student-centered learning environments in higher education.

CONCLUSIONS

Based on the findings, the researcher concluded that academic procrastination has a strong negative effect on students' self-regulation, social support, and academic achievement. Students who procrastinated less showed better skills in setting goals, managing time, and staying focused. They also reported receiving more support from others. In contrast, those who procrastinated more were likely to feel socially withdrawn and less willing to ask for help. Academic procrastination was also linked to lower academic performance. These results show that procrastination is not just a personal habit but a serious academic issue that affects how students manage their tasks, connect with others, and succeed in school.

REFERENCES

Akpur, Ugur (2020). The effect of procrastination on academic achievement: A meta-analysis study. International Journal of Educational Methodology. 6(4):681-690.

Aladin Ibrahim, Shyla Belarga, M. E Causing, S.A. Pandaraoan, E.M Gonzaga (2022). Self-efficacy and academic procastination among tourism and hospitality students in the new normal of education.

Amna Haider, Sara Najam, Syeda Narjis sherazi, Tehmina Akmal (2022). Self-regulated learning and academic procrastination among young adult e-learners: moderating role of self-regulated learning and academic procrastination among young adult e-learners: moderating role of gender.

Caggiano, V., Trigueros, R., Gonazalez-Bernal, J., et al (2023). Effects of academic self-regulation on procrastination, academic stress and anxiety, resilience, and academic performance in a sample of spanish secondary school students.

Elizondo, K., Valenzuela, R., Pestana, J., Codina, N., (2023). Self-regulation and procrastination in college students: a tale of motivation, strategy, and perseverance: Psychology in the schools/volume 61, issue 3/ p. 887-902. https://doi.org/10.002/pits.23088.

Fanzhi Zhu (2023). The positive and negative aspects of procrastination in college students: journal of education humanities and social sciences.

Giovanni della Ventura (2024). Procrastination statistics and facts 2024: shocking truths.

Goroshit, Marina (2018). Academic procrastination and academic performance: an initial basis for intervention. Journal of Prevention & Intervention Community 46(2): 131-142.

Itamar Shatz, PhD (2024). Procrastination statistics: interesting and useful statistics and useful statistics about procrastination.

Jared Armstrong (2023, April). Procrastination: a college student's best friend.

John Paul Santos, Joseph Villarama, Joseph Adsuara, and Gundran (2022). Students' time management, academic procrastination, and performance during online science and mathematics classes.

Joshua Lee & Riya Thomas (2023).Overcoming academic procrastination: a behavioral cognitive approach, Volume 12 Issues 4.

Koppenborg, M., Klingsieck K.B. (2022). Social factors or procrastination group work reduce procrastination among students. Social Psychology of Education 25, 249-274.

Luis Araya-Castillo, Mildred Burgos, Patricia Gonzalez, Yuracid Rivera, Nicolas Barrientos, Victor Yanez Jara, Francisco Ganga-Contreras, Walter Saez (2023). Procrastination in university students: a proposal of theoretical model.

Mecmack Nartea, Mark Angelo Gabriel, Hazel D.R. Samala, Raquel Javier (2020) Millenial's procrastination: factors and its relation to academic performance. Asia Pacific Journal of Multidisciplinary Research, Volume 8, No. 3

Maricar Camacho, Ariel Miranda, Jeehan Banggos, Jessa Mae Batulan, Mary Angelou Cardaño, Kristyll Faith Amor Menguita, Hannah Jane Rosagaran, (2022). Academic procrastination and self-motivation practices among first-year college education students in an online learning modality, psychology and education: A Multidisciplinary Journal, 6(6): 541-552.

Malkoc, A., Mutlu, A. (2018). Academic self-efficacy and academic procrastination:exploring the mediating role of academic motivation in turkish university students: Universal Journal of Educational Research.

Rosa Vermeulen (2021). Academic Procrastination: The influence of educational environmental factors on academic procrastination.

Sartaj Ahmad Bhat & Kunsar Jan (2023). Examining academic procrastination among college students in relation to academic satistifaction: A Correlational Study.

Soares, A.K.S., Coelho, G.L.H., Freires, L.A., da Fonseca, P.N., (2022). Journal of Psychoeducational Assessment: Psychometric Properties of the Academic Procrastination Scale (APS) in Brazil Volume 40, Issue 5.

Umam, N., Soeharto, T.N.E.D, (2021, October). Academic procrastination, family social support and academic stress: literature review. International Conference of Psychology Volume 1.

Yared Fentaw, Bekalu Moges, Sayed Ismail (2022). Academic procrastination behavior among public university students.

Elise M Walck-Shannon, Shaina F Rowell, Regina F Frey (2021). To what Extent Do Study Habits Relate to Performance: Articles from CBE Life Sciences Education.

Jaidumrong, N., Mahapoonyanont, N., Songsang, N., Gudmundsson, M. (2023) Effect of Growth Mindset on the Academic achievement of students. Jerald Moneva (2020). Student's Satisfaction in Their Financial Support and Persistence in School.

Minho, A.A., and Paiva, M.O. (2024). Self-Regulation in Academic Success: Exploring the Impact of Volitional Control Strategies, Time Management Planning, and Procrastination.

Tanuja, Bhatt (2023). Understanding the factors Influencing Academic Procrastination: A Comprehensive Review: Journal of Namibian Studies History Politics Culture.

Ransom Patternson (2021). Why Cramming Is Hurting Your Learning (and What to Do Instead): College Info Geek.

Santika, R., Arifin, S., Zulaiha, S., Gashimov, E., (2025). The Implementation of Self-Regulated Learning Strategies in Promoting Autonomy Learner among University Students.

Kyung Ryung Kim and Eun Hee Seo (2025). The relationship between procrastination and academic performance: A meta-analysis; Personality and Individual Differences Article, Volume 82, p.26-33.

Luis Francisco Vargas-Madriz and Chiaki Konishi (2021). The Relationship Between Social Support and Student Academic Involvement: The Mediating Role of School Belonging; Sage Journal-Canadian Journal of School Psychology Volume 36, Issue 4.

P.J. Ongcoy & R.Tagare Jr. (2024). The Role of Social Support in Shaping Students' Goal Achievement: The International Journal of Learner Diversity and Identities.

Chen, C., Bian, F., Zhu, Y., (2023). The relationship between social support and academic engagement among university students: the chain mediating effects of life satisfaction and academic motivation: BMC Public Health Article.

S. Sahranavard, M.R. Miri, H. Salehiniya (2018). The relationship between self-regulation and educational performance in students: Journal of Education and Health Promotion.

Mindsera (2025). Benefits of Journaling: The Science of Reflection: By Mindsera Mental Health Article.

Saul McLeod, PhD (2025). Simply Psychology: Operant Conditioning: What It Is, How It Works, And Examples.

Justin McCloskey (2011). Finally, My Thesis on Academic Procrastination: Academic Procrastination 2011 McCloskey PDF.

Peter Gavora, Jitka Jakesova and Jan Kalenda (2014). The Czech Validation of the Self-Regulation Questionnaire: Procedia-Social and Behavioral Sciences 171 (2015) 222-230.

Maricar Camacho, Ariel Miranda, Jeehan Banggos, Jessa Mae Batulan, Mary Angelou Cardaño, Kristyll Faith Amor Menguita and Hannah Jane Rosagaran (2022). A Multidisciplinary Journal Psychology and Education: Academic Procrastination and Self-motivation Practices among First-year College Education Students in an Online Learning Modality.

Journal of Educators Online: Academic Procrastination and Academic Performance among conventional and online learners: understanding role of learners' characteristics.

Emily Hennessy, Blair Johnson, Rebecca Acabchuk, Kiran McCloskey, and Jania Stewart-James (2017). Self-regulation mechanisms in Health Behavior Change: A systematic Meta-Analyses, 2006-2017.

Structural Learning (2023). Cognitive Development: Skinner's Theories.

EXPERIENCES ON THE CHILD-PROTECTION POLICY IMPLEMENTATION IN A PUBLIC SECONDARY SCHOOL

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ABSTRACT

This study investigates the present practices on the Child Protection Policy (CPP) implementation in a public secondary school in the Division of Santiago City. Utilizing a structured survey questionnaire, data were gathered from students, teachers, and parents to assess their perceptions of the policy's execution and effectiveness. Findings revealed that students generally perceived their schools as implementing the CPP to a "Great Extent," with teachers effectively addressing bullying and sexual violence. However, gaps exist in handling physical and psychological violence, with some students reporting excessive workloads, threats, and instances of discrimination. Variations in perceptions emerged based on age, sex, and grade level, with older students expressing higher confidence in CPP implementation. Teachers perceived themselves as highly committed to CPP enforcement, ensuring student protection, discipline, and support. However, differences in perceptions were noted based on age, gender, teaching experience, and educational attainment, particularly in areas such as discrimination and disciplinary actions. Parental perceptions indicate that while teachers promote respect and protect students, inconsistencies exist in inclusivity, particularly concerning students with disabilities. Parents also highlight variations in perceptions based on educational attainment, occupation, and income, particularly regarding teacher practices in discipline, emotional support, and bullying responses.

Keywords: Implementation, bullying, Child-Protection Policy, discipline

INTRODUCTION

Ensuring a safe and supportive learning environment is fundamental to a child's holistic development. Schools play a crucial role in safeguarding students from various forms of violence, including physical, psychological, and emotional harm. In response to this need, child protection policies have been established to promote a culture of respect, discipline, and well-being within educational institutions. According to the United Nations Children's Fund (UNICEF, 2021), effective child protection policies in schools help reduce instances of bullying, corporal punishment, and neglect, ensuring that students learn in a secure environment conducive to their growth. However, the success of these policies depends largely on their proper implementation and the awareness of key stakeholders—students, teachers, and parents.

Several studies have emphasized the importance of child protection measures in educational institutions. A study by Smith et al. (2019) found that schools with well-implemented child protection policies reported lower rates of bullying and student misconduct. Similarly, a report by the Department of Education (DepEd, 2020) in the Philippines highlighted that teacher training and parental involvement play critical roles in ensuring that these policies are effectively enforced. Despite these efforts, inconsistencies

in policy implementation still exist, with some stakeholders perceiving a lack of strict enforcement or insufficient awareness regarding their rights and responsibilities (Garcia & Santos, 2021).

The position of children in the Philippines is equally distinctive. The Philippines is believed to be a child-oriented society. Children are a vital portion of the fabric of the Filipino culture. Filipinos have many children, they guard them carefully, love to talk about them in many senses. The Philippine society earns great pride in its children. Who would not take pride in their children in a country of over 102 million in which practically 35 percent of its population is children? (United Nations Department of Economic and Social Affairs: Population Division, 2016).

However, one global problem with severe life-long consequences is child abuse. Violence against children involving physical, sexual and emotional abuse, exploitation and neglect has been revealed to be widely predominant in all societies (WHO, 2002; UN, 2006). In life-threatening cases, child abuse and neglect can lead to death. In 2013, around 1,484 children died as a result of maltreatment or neglect (National Center for Injury Prevention and Control, 2012).

With these challenges in education, the Department of Education has not stopped from strengthening orders for the schools. As cited in Cervancia et al. (2019), the DepEd order No. 40, s. 2012, also known as the "Policy and Guidelines on Protecting Children in School from Abuse, Violence, Exploitation, Discrimination, Bullying and Other Forms of Abuse," shall ensure that all schools become enabling environment that are conducive to education. As such, the best interest of the children for security and participation, should be given paramount consideration in all decisions and actions involving them.

Thus, this study attempts to explore the present practices of Child Protection Policy (CPP) and its extent of implementation in the public secondary schools. Moreover, it aims to investigate the relationship between the present practices of the respondents in the school and the extent of implementing the CPP the expected actions of the school based on the Child Protection Policy.

Generally, this study aimed to identify the experiences on the Child Protection Policy in the Santiago City National High School. Specifically, this study sought to answer the following questions:

Statement of the Problem

Generally, this study aimed to evaluate the experiences related to the Child Protection Policy in a public school in Santiago City.

Specifically, it sought to answer the following research questions:

1. What are experiences related to the Child Protection Policy as experienced by the teachers, students and parents in the following:
   1.1 discrimination;
   1.2 bullying;
   1.3 corporal punishment;
   1.4 psychological violence; and
   1.5 sexual violence?
2. What is the difference on the perceived experiences related to Child Protection Policy among the three (3) groups of respondents?

Hypothesis

1.There is no significant difference on the perceived experiences related to child Protection Policy among the three (3) groups of respondents.

METHODOLOGY

This study utilized a descriptive-correlational-comparative research design to describe characteristics of the population, examine relationships between variables without manipulation, and compare groups to identify differences or similarities, particularly in situations where the researcher has no control over independent variables (Lappe, 2000). The respondents included 357 Junior High School students, 357 parents, and 95 teachers from Santiago City National High School, selected through probability sampling to ensure equal representation, with Slovin's formula employed to determine the sample size at a 95% confidence level (Singh, 2018). Data collection was done through a 54-item questionnaire anchored on De-

pEd Order No. 40, s. 2012. Prior to data gathering, permission was obtained from the Schools Division Superintendent and school principals, after which schedules for the distribution and retrieval of questionnaires were arranged. Statistical tools included frequency and percentage to describe respondents' evaluation on the experiences of CPP, the Chi-Square Test to determine significant differences in perceptions between students, teachers, and parents, and between present practices.

RESULTS AND DISCUSSION

Table 1. Respondents' Perception on the Experiences related to Child Protection Policy in terms of Discrimination Dimension

Discrimination	Students		Teachers		Parents	
	Mean	VI	Mean	VI	Mean	VI
Students with disability are excluded in performances, especially in contested activities.	2.04	Sometimes	1.77	Sometimes	2.29	Sometimes
Teachers give more criticism to boys, since they are not so sensitive compared to girls.	1.97	Sometimes	1.47	Never	1.99	Sometimes
Teachers strictly follow the curriculum guide and instruct students to comply with requirements and performances without considering their religious stand.	2.11	Sometimes	2.28	Sometimes	2.44	Sometimes
Students who are older than the others lead the group in activities.	1.56	Sometimes	2.14	Sometimes	2.10	Sometimes
When students get pregnant, they are given modules to work at home to finish their study.	2.86	Often	3.78	Always	2.81	Often
Teachers encourage the students to respect others or their classmates and should not laugh when words are mispronounced.	3.71	Always	3.98	Always	3.66	Always
Category Mean	**2.38**	**Sometimes**	**2.57**	**Often**	**2.55**	**Often**

Legend: VI-Verbal Interpretation

Table 1 present the respondents' perception on the experiences related to Child Protection Policy in terms of discrimination dimensions. The findings from the table highlight various aspects of discrimination as perceived by students, teachers, and parents.

It can be seen on the table that overall, the category mean scores indicate that students perceive discrimination as occurring "sometimes" with a mean rating of 2.38, while teachers with a mean of 2.57 and parents with a mean of 2.55 perceive it as happening "Often." These variations in perception highlight the need for ongoing awareness and intervention strategies. Schools should prioritize inclusivity by providing teacher training on unconscious biases, ensuring equal opportunities for all students, and strengthening support for marginalized groups.

As to the students' perception, indicator "Teachers encourage the students to respect others or their classmates and should not laugh when words are mispronounced" was experienced "always" as it gained the highest weighted mean of 3.71, followed by indicator "When students get pregnant, they are given modules to work at home to finish their study" with a weighted mean of 2.86 with a qualitative description of "often". While indicators, "Teachers strictly follow the curriculum guide and instruct students to comply with requirements and performances without considering their religious stand", "Students with disability are excluded in performances, especially in contested activities", "Teachers give more criticism to boys, since they are not so sensitive compared to girls" and "Students who are older than the others lead the group in activities" were experienced "sometimes" in the school as indicated with the weighted mean of 2.11, 2.04, 1.97 and 1.57 respectively.

In terms of teachers' perception, it can be seen that indicator "Teachers encourage the students to respect others or their classmates and should not laugh when words are mispronounced" was practice "always" as indicated with a mean of 3.98 followed by indicator "When students get pregnant, they are given modules to work at home to finish their study" with a mean rating of 3.78. Moreover, indicator "Students who are older than the others lead the group in activities", "Teachers strictly follow the curriculum guide and instruct students to comply with requirements and performances without considering their religious stand" and "Students with disability are excluded in performances, especially in contested activities" were experienced "sometimes" in the school premises as indicated by the weighted mean of 2.28, 2.14 and 1.77 respectively. However, indicator "Teachers give more criticism to boys, since they

are not so sensitive compared to girls" gained the lowest weighted mean and was "never" experienced in the school premises as indicated by its weighted mean of 1.47.

As regards to the parents' assessment, it can be seen on the table that indicator "Teachers encourage the students to respect others or their classmates and should not laugh when words are mispronounced" gained the highest weighted mean of 3.66 and was practiced "always". Indicator "When students get pregnant, they are given modules to work at home to finish their study" was practiced "often" with a weighted mean of 2.81 while, other indicators were practiced "sometimes" in the school premises. The following indicators were: "Students with disability are excluded in performances, especially in contested activities", "Teachers give more criticism to boys, since they are not so sensitive compared to girls", "Teachers strictly follow the curriculum guide and instruct students to comply with requirements and performances without considering their religious stand" and "Students who are older than the others lead the group in activities" with a weighted mean of 2.29, 1.99, 2.44 and 2.10 respectively.

Table 2. Respondents' Perception on the experiences related to Child Protection Policy in terms of Bullying Dimension

Bullying	Students		Teachers		Parents	
	Mean	VI	Mean	VI	Mean	VI
When a student threatens another student, the advisers are informed to address the problem.	3.50	Always	3.85	Always	3.42	Often
When a student ridicules his classmate, teachers also laugh with others.	1.65	Sometimes	1.67	Sometimes	1.95	Sometimes
Teachers confront students who intentionally take their classmate's property (cellphone, bag, etc.).	3.32	Often	3.75	Always	3.51	Always
Teachers immediately approach students who are speaking ill with one another.	3.20	Often	3.89	Always	3.35	Often
The teachers demand the students to change or purchase whatever is damaged owned by the victim.	2.57	Often	2.60	Often	2.80	Often
Teachers immediately respond to students who are having disagreement or misunderstanding in the classroom.	3.53	Always	3.78	Always	3.45	Often
Category Mean	**2.96**	**Often**	**3.26**	**Often**	**3.08**	**Often**

Legend: VI-Verbal Interpretation

Table 2 presents respondents' perceptions regarding experiences related to the Child Protection Policy in terms of the bullying dimension. It examines the perspectives of students, teachers, and parents on various bullying-related scenarios in schools.

Based on the students' assessment, indicators "Teachers immediately respond to students who are having disagreement or misunderstanding in the classroom" and "When a student threatens another student, the advisers are informed to address the problem" were experienced "always" as indicated by the mean ratings of 3.53 and 3.50 respectively. Indicators "Teachers confront students who intentionally take their classmate's property (cellphone, bag, etc.)" with a weighted mean of 3.32, "Teachers immediately approach students who are speaking ill with one another" with a weighted mean of 3.20, and "Teachers immediately approach students who are speaking ill with one another" with a mean rating of 2.57 were experienced "often" as perceived by the students. While indicator "When a student ridicules his classmate, teachers also laugh with others" gained the lowest mean rating of 1.65 with a qualitative description of "sometimes".

As to the teachers' perception, indicator "Teachers immediately approach students who are speaking ill with one another." gained the highest mean rating of 3.89 followed by indicator "When a student threatens another student, the advisers are informed to address the problem" with mean rating of 3.85 both with a qualitative description of "always". Moreover, indicators "Teachers immediately respond to students who are having disagreement or misunderstanding in the classroom" and "Teachers confront students who intentionally take their classmate's property (cellphone, bag, etc.)." were also "always" experienced in the school as it gained a high mean rating of 3.78 and 3.75 respectively. Indicator "The teachers demand the students to change or purchase whatever is damaged owned by the victim" was experienced "often" as indicated by its mean rating of 2.60, while indicator "When a student ridicules his classmate, teachers also laugh with others" gained lowest mean rating of 1.67 with a qualitative description of "sometimes".

As to the parents' assessment, indicator "Teachers confront students who intentionally take their classmate's property (cellphone, bag, etc.)" was experienced "always" as indicated by its high mean rating of 3.51. While indicators "When a student threatens another student, the advisers are informed to address the problem", "Teachers immediately approach students who are speaking ill with one another", "The teachers demand the students to change or purchase whatever is damaged owned by the victim" and "Teachers immediately respond to students who are having disagreement or misunderstanding in the classroom" were "often" experienced in the school premises as indicated by the gained weighted mean of 3.42, 3.35, 2.80 and 3.45 respectively. Lastly, indicator "When a student ridicules his classmate, teachers also laugh with others." Was experienced "sometimes" with its weighted mean of 1.95 as perceived by the respondents.

The overall, the category means of students (2.96), teachers (3.26), and parents (3.08) suggest that interventions related to bullying are "Often" implemented. Strengthening teacher awareness and responsiveness in all forms of bullying, particularly in non-physical aspects, could further enhance the effectiveness of the Child Protection Policy in schools.

Table 3. Respondents' Perception on the experiences related to Child Protection Policy in terms of Physical Violence Dimension

Physical Violence	Students		Teachers		Parents	
	Mean	VI	Mean	VI	Mean	VI
Teachers expose the students to sunlight as a form of discipline strategy.	1.17	Never	1.08	Never	1.34	Never
Teachers throw chalk or eraser to students who are misbehaving.	1.19	Never	1.12	Never	1.54	Sometimes
Teachers strike the student's head when he does not listen and is really annoying in the classroom.	1.10	Never	1.08	Never	1.28	Never
Teachers do not allow the students to take a break, go out for CR even if they become necessity, unless they finish their activities or requirements.	1.53	Sometimes	1.20	Never	1.79	Sometimes
Teachers confiscate personal property of students which poses a danger to them or to others.	2.60	Often	3.04	Often	2.76	Often
Teachers choose to observe space from students especially when angry to avoid physical violence.	2.83	Often	3.38	Often	2.81	Often
Category Mean	**1.74**	**Sometimes**	**1.82**	**Sometimes**	**1.92**	**Sometimes**

Legend: VI-Verbal Interpretation

Table 3 presents respondents' perceptions regarding experiences related to the Child Protection Policy in terms of the physical violence dimension. It examines the perspectives of students, teachers, and parents on various physical violence scenarios in schools.

The results indicate that physical violence as a disciplinary strategy is generally not practiced by teachers, as perceived by students, teachers, and parents. Indicators such as exposing students to sunlight, throwing objects, and striking students' heads were rated as "Never" or "Sometimes," suggesting that these harsh disciplinary measures are largely avoided. However, restricting restroom breaks until students complete their tasks was occasionally experienced, with students rating it as "Sometimes," while teachers reported it as "Never," indicating a possible discrepancy in perception. The most frequently observed practices were confiscating students' personal property if it posed a danger and teachers distancing themselves when angry to prevent physical violence.

These findings suggest that while outright physical punishment is not common, certain disciplinary actions, such as withholding restroom access and confiscating items, are still practiced. The consistent response of teachers distancing themselves when angry implies an awareness of preventing escalation, which is a positive approach. However, the discrepancies in perception between students and teachers regarding certain disciplinary measures highlight the need for clearer communication and reinforcement of child protection policies. Schools should continue promoting positive discipline strategies, ensuring that any restrictive measures are justified, well-explained, and do not compromise students' well-being. Moreover, awareness campaigns should be conducted to align students', teachers', and parents' perceptions regarding discipline and classroom management.

Table 4. Respondents' Perception on the experiences related to Child Protection Policy in terms of Psychological Violence Dimension

Psychological Violence	Students		Teachers		Parents	
	Mean	VI	Mean	VI	Mean	VI
Teachers set a high standard which the students should meet and make no adjustment.	2.29	Sometimes	1.66	Sometimes	2.10	Sometimes
Teachers shout at students in front of the crowd.	1.80	Sometimes	1.43	Never	1.87	Sometimes
Teachers throw and destroy phones or any materials which make them busy instead of doing what is instructed to them.	1.16	Never	1.08	Never	1.29	Never
Teachers insult the students in the classroom for them to focus in listening during discussions.	1.52	Sometimes	1.11	Never	1.53	Sometimes
Teachers give many activities which can be done in 1 week but is required to be done for only 2 days for them to go beyond their potential.	2.73	Often	1.15	Never	2.36	Sometimes
Teachers threaten students to receive failing grades when they do not follow exactly what are told to them.	2.03	Sometimes	1.49	Never	2.13	Sometimes
Category Mean	**1.92**	**Sometimes**	**1.32**	**Never**	**1.88**	**Sometimes**

Legend: VI-Verbal Interpretation

Table 4 reveals the respondents' perceptions regarding experiences related to the Child Protection Policy in terms of psychological violence. It examines how students, teachers, and parents perceive various disciplinary actions and their alignment with child protection policies.

The overall category mean shows that students (1.92) and parents (1.88) perceive psychological violence as occurring "sometimes," while teachers (1.32) largely perceive it as "never" occurring. This disparity in perception highlights a potential gap in awareness between educators and their students regarding classroom experiences.

Among the specific indicators, students reported the highest mean of 2.73, with a qualitative description of "often" on the indicator stating that “Teachers give many activities which can be done in 1 week but is required to be done for only 2 days for them to go beyond their potential”. This indicates that students feel pressured by excessive workload expectations. In contrast, teachers reported a much lower mean of 1.15 with a qualitative description of "never", indicating they do not perceive their assignment of activities as excessive. Parents, however, rated this aspect at 2.36 with a qualitative description of "sometimes" implying moderate concern.

The second-highest mean among students was mean 2.29 with a qualitative description of "sometimes" was on the perception that “Teachers set a high standard which the students should meet and make no adjustment”. Parents similarly rated this at 2.10 with a qualitative description of "sometimes", while teachers rated it at 1.66 with a qualitative description of "sometimes", suggesting that while teachers acknowledge setting high expectations, they may not fully recognize students’ struggles in meeting them.

Indicator “Teachers shout at students in front of the crowd” was rated at 1.80 with a qualitative description of "sometimes" by students, 1.87 mean rating with a qualitative description of "sometimes" by parents, and mean rating of 1.43 or "never" by teachers. This indicates that this psychological violence was never experienced in the school as perceived by the respondents. A similar trend is seen in the indicator stating that “Teachers insult the students in the classroom for them to focus in listening during discussions”, with students rating it 1.52 or "sometimes" as its qualitative equivalent and teachers at 1.11 or "never".

Additionally, indicator “Teachers threaten students to receive failing grades when they do not follow exactly what are told to them”, was perceived by students and parents as happening "sometimes" as it gained a weighted mean of 2.03 and 2.13 respectively, whereas teachers largely denied this practice "never" gaining a weighted mean of 1.49. The least prevalent form of psychological violence was indicator “Teachers throw and destroy phones or any materials which make them busy instead of doing what is instructed to them” with students, teachers, and parents all rating it as "never" occurring as this was gained a mean rating of 1.16, 1.08 and 1.29 respectively.

While students and parents acknowledge the presence of psychological violence to some extent, teachers largely deny engaging in such actions. Open communication between teachers, students, and parents should be encouraged to bridge these gaps in perception and create a more supportive learning environment.

Table 5. Respondents' Perception on the Experiences related to Child Protection Policy in terms of Sexual Violence Dimension

Sexual Violence	Students		Teachers		Parents	
	Mean	VI	Mean	VI	Mean	VI
The students are encouraged to immediately report malicious actions of teachers toward them.	3.42	Often	3.74	Always	3.29	Often
The student-victim is advised not to be afraid in filing a case against the teacher.	3.50	Always	3.79	Always	3.42	Often
When a teacher overhears how his co-teacher causes the students to engage in sexual activity, he should report immediately to the Principal.	3.58	Always	3.45	Often	3.23	Often
When a teacher threatens a student of giving failing grades unless satisfied sexually, a complaint is filed against him and the parents are informed.	3.40	Often	3.62	Always	3.02	Often
When a teacher witnesses how a student is sexually abused by a teacher, he should take pictures as evidences.	3.19	Often	3.48	Often	3.22	Often
A male teacher should not embrace his female student and vice versa, especially in closed doors.	3.56	Always	3.88	Always	3.42	Often
Category Mean	**3.44**	**Often**	**3.26**	**Often**	**3.27**	**Often**

Legend: VI-Verbal Interpretation

Table 5 presents respondents' perceptions regarding experiences related to the Child Protection Policy in terms of sexual violence.

The findings on sexual violence awareness and reporting indicate that students, teachers, and parents generally agree on the importance of taking action against inappropriate behavior. The overall category mean shows that students, teachers, and parents all perceive these concerns as occurring "often" with its gained mean of 3.44, 3.26 and 3.27 respectively. This suggests a shared awareness of the need for vigilance and proactive measures in addressing cases of sexual violence within the school setting.

Among the specific indicators, students (3.58, "always") and teachers (3.45, "often") strongly agreed to the indicator “When a teacher overhears how his co-teacher causes the students to engage in sexual activity, he should report immediately to the principal” while parents rated this slightly lower (3.23, "often"), indicating a similar stance but with slightly less urgency.

Indicator “A male teacher should not embrace his female student and vice versa, especially in closed doors” teachers-respondents gave a high mean rating of 3.88 with a qualitative description "always", suggesting that educators strongly recognize the need for professional boundaries. A mean rating from the student of 3.56, or "always" and parents gave a mean rating of 3.42 or "often" also agreed, reinforcing the importance of maintaining appropriate teacher-student interactions.

Indicator, “The students are encouraged to immediately report malicious actions of teachers toward them” was rated "often" by students with a mean rating of 3.42 and parents with mean rating of 3.29, while teachers rated it "always" with a mean rating of 3.74. This suggests that teachers strongly support reporting mechanisms, possibly as a deterrent against misconduct. Similarly, indicator “The student-victim is advised not to be afraid in filing a case against the teacher” received high ratings from students with 3.50, or "always" as its descriptive equivalent, teachers with a mean rating of 3.79, or "always" as its descriptive equivalent, and parents with 3.42 as its mean rating, or "often", showing strong advocacy for justice and protection of students' rights.

A key concern is the indicator “When a teacher threatens a student of giving failing grades unless satisfied sexually, a complaint is filed against him and the parents are informed”. Teachers rated this as "always" with a mean rating of 3.62, while students gained a mean rating of 3.40 and parents with 3.02 as mean rating or "often" as its descriptive equivalent. This suggests that while teachers strongly believe in the importance of immediate action, students and parents may feel less confident about how effectively such cases are addressed.

Lastly, indicator “When a teacher witnesses how a student is sexually abused by a teacher, he should take pictures as evidences”, students rated the lowest mean rating of 3.19, or "often" as its descriptive equivalent and teacher with a mean rating of 3.48, or "often" as its descriptive equivalent, with parents slightly lower at 3.22 or "often".

Overall, the results highlight a general consensus on the importance of reporting sexual violence and ensuring preventive measures. However, while teachers express stronger support for taking action, students and parents may still have hesitations about the effectiveness of existing mechanisms.

Table 6. Test of Differences on the Experiences Anchored on the Child Protection Policy when grouped according to Profile of Teacher-Respondents

Indicators	AGE		SEX		# OF YEARS IN THE SERVICE		EDUCATIONAL ATTAINMENT	
	t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value
A. DISCRIMINATION								
1. Students with disability are excluded in performances, especially in contested activities.	4.08*	0.02	0.52 ns	0.61	6.07*	0.00	5.67 ns	0.01
2. Teachers give more criticism to boys, since they are not so sensitive compared to girls.	1.21 ns	0.30	0.37 ns	0.72	2.34 ns	0.09	1.92 ns	0.15
3. Teachers strictly follow the curriculum guide and instruct students to comply with requirements and performances without considering their religious stand.	0.48 ns	0.62	0.86 ns	0.40	3.94*	0.01	3.30 *	0.04
4. Students who are older than the others lead the group in activities.	4.28*	0.02	1.83 ns	0.07	3.92*	0.01	2.55 ns	0.08
5. When students get pregnant, they are given modules to work at home to finish their study.	0.04 ns	0.96	0.06 ns	0.95	1.16 ns	0.33	0.02 ns	0.98
6. Teachers encourage the students to respect others or their classmates and should not laugh when words are mispronounced.	0.39 ns	0.68	0.99 ns	0.33	0.61 ns	0.61	1.61 ns	0.21
B. BULLYING								
7. When a student threatens another student, the advisers are informed to address the problem.	0.55 ns	0.58	0.78 ns	0.44	0.70 ns	0.56	3.03 ns	0.05
8. When a student ridicules his classmate, teachers also laugh with others.	4.02*	0.02	1.83 ns	0.07	2.14 ns	0.10	0.45 ns	0.64
9. Teachers confront students who intentionally take their classmate's property (cellphone, bag, etc.).	1.62 ns	0.20	0.06 ns	0.96	0.93 ns	0.43	1.09 ns	0.34
10. Teachers immediately approach students who are speaking ill with one another.	2.96 ns	0.06	1.78 ns	0.08	1.97 ns	0.13	2.97 ns	0.06
11. The teachers demand the students to change or purchase whatever is damaged owned by the victim.	5.70*	0.01	0.91 ns	0.37	3.29*	0.02	0.22 ns	0.80
12. Teachers immediately respond to students who are having disagreement or misunderstanding in the classroom.	0.60 ns	0.55	4.41*	0.00	4.81*	0.00	1.58 ns	0.21
C. PHYSICAL VIOLENCE								
13. Teachers expose the students to sunlight as a form of discipline strategy.	0.46 ns	0.63	1.42 ns	0.16	1.10 ns	0.35	1.31 ns	0.27
14. Teachers throw chalk or eraser to students who are misbehaving.	0.13 ns	0.88	1.24 ns	0.22	0.63 ns	0.60	2.20 ns	0.12
15. Teachers strike the student's head when he does not listen and is really annoying in the classroom.	0.41 ns	0.67	1.34 ns	0.19	1.35 ns	0.26	1.68 ns	0.19
16. Teachers do not allow the students to take a break, go out for CR even if they become necessity, unless they finish their activities or requirements.	0.74 ns	0.48	0.86 ns	0.39	2.33 ns	0.08	0.13 ns	0.88
17. Teachers confiscate personal property of students which poses a danger to them or to others.	0.96 ns	0.39	0.63 ns	0.53	0.73 ns	0.54	0.60 ns	0.55
18. Teachers choose to observe space from students especially when angry to avoid physical violence.	0.90 ns	0.41	3.18*	0.00	4.25*	0.01	3.38*	0.04
D. PSYCHOLOGICAL VIOLENCE								
19. Teachers set a high standard which the students should meet and make no adjustment.	0.88 ns	0.42	2.21*	0.03	1.63 ns	0.19	1.91 ns	0.15
20. Teachers shout at students in front of the crowd.	2.56 ns	0.08	0.89 ns	0.38	3.99*	0.01	1.26 ns	0.29
21. Teachers throw and destroy phones or any materials which make them busy instead of doing what is instructed to them.	0.16 ns	0.86	0.35 ns	0.73	0.72 ns	0.55	1.34 ns	0.27
22. Teachers insult the students in the classroom for them to focus in listening during discussions.	0.21 ns	0.81	1.70 ns	0.09	0.40 ns	0.76	0.45 ns	0.64
23. Teachers give many activities which can be done in 1 week but is required to be done for only 2 days for them to go beyond their potential.	0.46 ns	0.64	0.25 ns	0.80	1.23 ns	0.30	0.87 ns	0.42
24. Teachers threaten students to receive failing grades when they do not follow exactly what are told to them.	0.69 ns	0.51	2.37*	0.02	1.32 ns	0.27	10.81*	0.00
E. SEXUAL VIOLENCE								
25.The students are encouraged to immediately report malicious actions of teachers toward them.	4.02*	0.02	2.79*	0.01	2.61 ns	0.06	2.44 ns	0.09
26. The student-victim is advised not to be afraid in filing a case against the teacher.	1.83 ns	0.17	0.21 ns	0.83	0.72 ns	0.54	0.78 ns	0.46
27. When a teacher overhears how his co-teacher causes the students to engage in sexual activity, he should report immediately to the Principal.	2.59 ns	0.08	1.38 ns	0.17	1.24 ns	0.30	2.55 ns	0.08
28. When a teacher threatens a student of giving failing grades unless satisfied sexually, a complaint is filed against him and the parents are informed.	3.39*	0.04	0.81 ns	0.42	0.44 ns	0.73	1.95 ns	0.15
29. When a teacher witnesses how a student is sexually abused by a teacher, he should take pictures as evidences.	3.19*	0.04	2.04 ns	0.04	4.69*	0.00	0.02 ns	0.98
30. A male teacher should not embrace his female student and vice versa, especially in closed doors.	0.73 ns	0.49	0.24 ns	0.81	0.85 ns	0.47	1.83 ns	0.17

ns- not significant **-significant*

The results from Table 6 indicate significant differences in the present practices anchored on the Child Protection Policy when grouped according to teachers' profiles, specifically in terms of age, sex, years in service, and educational attainment. In the area of discrimination, age and years in service showed significant influence on certain practices, such as excluding students with disabilities from performances and allowing older students to take leadership roles in group activities. Teachers with more years in service were also found to adhere strictly to the curriculum without considering students' religious stand.

Regarding bullying, there were significant variations based on age and years of service, particularly in instances where teachers demand students to replace damaged property. Additionally, teachers' sex and years in service were found to influence how they immediately respond to student disagreements, suggesting a variance in intervention strategies.

For physical violence, the findings highlight that teachers' sex, years in service, and educational attainment significantly impact how they handle disciplinary actions, such as choosing to avoid physical violence by maintaining distance from students when angry.

Psychological violence also showed significant variations, with sex and years in service affecting practices such as setting high standards for students and threatening them with failing grades. Interestingly, educational attainment played a role in the likelihood of teachers using grades as a form of coercion, suggesting that higher educational qualifications may influence adherence to more ethical teaching practices.

Lastly, in the category of sexual violence, age and sex significantly influenced teachers' encouragement for students to report malicious actions. Years in service also played a role in whether teachers take active measures, such as documenting evidence of abuse. The findings indicate that experience and gender play crucial roles in how teachers enforce child protection measures.

Overall, the results suggest that while most practices align with the Child Protection Policy, there are still variations in implementation based on demographic factors, highlighting the need for consistent training and reinforcement of child protection guidelines across all teacher demographic.

CONCLUSIONS

On the basis of the results and in view of the objectives and hypothesis of the study, the following conclusions were clinched:

1. Teachers with 1-5 years in the teaching service represent the largest group, while Bachelor's Degree gained the majority in terms of educational attainment.
2. The study highlights varying assessments on the experiences anchored in the Child Protection Policy among students, teachers, and parents. While discrimination and psychological violence are acknowledged differently across groups, physical violence is minimal, and all respondents recognize the seriousness of sexual violence. These findings underscore the need for greater awareness, stronger interventions, and better alignment in understanding child protection issues.
3. The study affirms that the Child Protection Policy is implemented effectively in schools, with students, teachers, and parents acknowledging its significant presence. Teachers demonstrated the highest confidence in the policy's execution, while students' views fell in between. The findings reveal a critical need to enhance parental involvement, especially in training programs, to ensure a more comprehensive and collaborative approach to child protection.

4. Statistical analysis confirmed notable variations across different child protection practices, leading to the rejection of the null hypothesis. These differences suggest that personal backgrounds, roles, and levels of exposure shape stakeholders' understanding and engagement with child protection measures.

RECOMMENDATIONS

Based on the foregoing discussions the following recommendations are put forwards for consideration.

1. Teachers may receive more trainings on CPP implementation particularly in handling psychological violence (e.g., threats, excessive workloads, and shouting), as students report that these practices are inconsistently addressed.
2. The Santiago City National High School may conduct information drive regarding the school's efforts in implementing the CPP, especially on issues like record-keeping of bullying incidents and coordination with social welfare agencies.
3. The Schools Division of Santiago City may standardize and monitor disciplinary practices through application of apply non-violent disciplinary practices uniformly across all student groups, avoiding physical punishments and psychologically harmful practices.
4. Establish clearer and more accessible reporting channels for students to report bullying and sexual misconduct. Schools should ensure that students feel confident in using these mechanisms without fear of punishment.
5. Improve stakeholders' engagement, especially the parents to raise awareness of the CPP and their role in supporting child protection efforts. Schools may reinforce the importance of emotional support and mental well-being in parent-teacher communication;
6. Given the significant differences in perceptions regarding psychological violence based on occupation and income, the school management should work closely with parents to align expectations and improve practices related to stress management and emotional well-being;
7. The School Head conduct regular audits and monitoring of the implementation of the CPP, with a focus on areas where significant negative correlations (e.g., physical violence) have been identified. This will help in understanding how capacity-building efforts and disciplinary proceedings may impact student safety.

REFERENCES

Child Right Act. (2003). Retrieved from https://www.refworld.org/cgi-bin/texis/vtx/rwmain/opendocpdf.pdf?reldoc=y&docid=556820554

Department of Social Welfare and Development. (2021b). *Nationwide Directory of Private Social Welfare and Development Agencies (SWDAs) with EXPIRED Registration, Registration and License/ License to Operate and/or Accreditation issued by DSWD As of March 11, 2021*.

Graff, C. (2018). Residential care of children in the Philippines'. In T. Islam & L. Fulcher (Eds.), *Residential child and youth care in a developing world* (pp. 355–367). The CYC-Net Press.

Hacking, I. (1991). The making and molding of child abuse. Critical Inquiry, vol, 17, pp. 253-288. Retrieved from https://www.journals.uchicago.edu/doi/abs/10.1086/448583?journalCode=ci

HM Government. (2006). Working together to safeguard children. London: TSO. Retrieved from https://www.aoc.co.uk/sites/default/files/Working_Together_to_Safeguard_Children.pdf

Junio, A. (2015). #APSB2015: Sneak Peek – First National Baseline Study on child abuse and neglect in PH. Mulat Pinoy-Kabataan News Network (MP-KNN).

Kim, E., & Yoo, J. (2015). Conditional cash transfer in the Philippines: How to overcome institutional constraints for implementing social protection. *Asia & the Pacific Policy Studies*, **2**(1), 75–89.

Mutavdžić, A. (2024). Violence in Schools. Science & Society. https://www.researchgate.net/publication/380037105

National Center for Injury Prevention and Control (2012). Child Maltreatment.

Ramiro, L., Madrid, B., & Luna, P. (2022). National Baseline Study on Violence against Children and Youth (NBS-VAC) in the Philippines. University of the Philippines Manila

Ramesh, M. (2014). Social protection in Indonesia and the Philippines: Work in progress. *Journal of Southeast Asian Economies*, **31**(1), 40–56.

Republic of the Philippines. DepEd Order No. 40. s. 2012, "DepEd Child Protection Policy". Retrieved from http://www.deped.gov.ph/sites/default/files/ order/2012/DO_s2012_40.pd

Singh, S. (2018). Sampling Techniques. Retrieved from https://towardsdatascience.com/sampling-techniques-a4e34111d808

UNESCO. "Behind the numbers: ending school violence and bullying". 2019. https://doi.org/10.54675/TRVR4270

UN General Assembly. Convention on the Rights of the Child. 20 November 1989, United Nations, Treaty Series, vol. 1577, p. 3. Retrieved from http://www.refworld.org/docid/3ae6b38f0.html

UNICEF. (2016). *Strengthening child protection systems in the Philippines—Child protection in emergencies*. United Nations Children's Fund.

UNICEF East Asia & Pacific, ASEAN. Ending violence against children in ASEAN member States: Baseline study of priority areas under the ASEAN Regional Plan of Action on the Elimination of Violence against Children A snapshot as of 2016. By Afrooz Kaviani Johnson, 2017. Retrieved online through Retrieved from https://www.unicef.org/eap/reports/endingviolence-against-children-asean-member-states

Vaezi K. (2018). Interpreting the student's experiences of violence in the educational system. *Social work Mag*. 6, 5–13.

Wells, K., Cortes-Morales, S., Esson, J., Horgan, D., Nxumalo, F., Phoenix, A.,Rosen, R. (2024). Israel's war on Gaza and the violation of children's rights. Children's Geographies, 1–4. https://doi.org/10.1080/14733285.2024.2316752

Wijayaratne S. (2020). After the violence. *J. Relig. Health* 59:3. 10.1007/s10943-019-00965-w

Wodon, Quentin, Chloe Fèvre, Chata Malé, Ada Nayihouba, and Hoa Nguyen. "Ending Violence in Schools: An Investment Case". World Bank, Washington, DC, July 2021. http://hdl.handle.net/10986/35969.

World Health Organization. (2006). Preventing child maltreatment: A guide to taking action and generating evidence. Geneva: World Health Organization and International Society for Prevention of Child Abuse and Neglect. Retrieved from https://www.who.int/whr/2006/whr06_en.pdf

World Health Organization. (1999). Report of the Consultation on Child Abuse Prevention. Geneva: World Health Organization. Retrieved from https://www.who.int/whr/1999/en/

Bayuca, S.A (2020). Teachers' Awareness and School's Responsiveness to the Child Protection Policy: Basis for a Development Plan. International Journal of Academic Multidisciplinary Research (IJAMR), Vol. 4, Issue 6, Pages: 59-65

Castino, L. (2023). Child protection policy and behavioral management practices at a public elementary school in Rizal, Philippines. International Journal of Multidisciplinary Applied Business and Education

Cervancia, J., Hernandez, K., Rodavia, M., & Roxas, E. (2019). Child Abuse and Compliance on Child Protection Policy in Private and Public Basic Educational Institution. Philippines. International Journal for Cross-Disciplinary Subjects in Education, Volume 10, Issue 1.

Cheney, K., & Ucembe, S. (2019). The orphan industrial complex: The charitable commodification of children and its consequences for child protection. In K. Cheney & A. Sinervo (Eds.), *Disadvantaged childhoods and humanitarian intervention* (pp. 37–61). Palgrave Macmillan.

Estremera, M. (2018). The Boons and Banes of Child Protection Policy: The Sorsogon West Landscape. Philippines. Asia Pacific Journal of Multidisciplinary Research, Vol. 6 No. 2, 71-79. P-ISSN 2350-7756/ E-ISSN 2350-8442.

Jerkins, B., Tilbury, C., Mazerolle, P. & Hayes, H. (2017). The complexity of child protection recurrence: The case for a systems approach. Australia. Child Abuse & Neglect 63 162-171. DOI: 10.1016/j.chiabu.2016.11.020.

Mathews, B., & Kenny, M. (2008). Mandatory reporting legislation in the USA, Canada and Australia: A cross-jurisdictional review of key features, differences and issues. Child Maltreatment, vol. 13(1), pp. 50-63. doi: 10.1177/1077559507310613.

Mag-atas, J. D. & Carmona, B. M. (2023). Bridging Policy and Practice: An In-depth Exploration of How the DepEd Child Protection Policy Influences Teacher Discipline Strategies. Journal of Multidisciplinary Studies, Vol.3, Issue.9, pg. 126-135. DOI: 10.47760/cognizance.2023.v03i09.008

Monterona, M. (2016). Implementation of Child Abuse Act (RA 7610) in Manila: Inputs for Policy Advocacy. Philippines. JPAIR Multidisciplinary Research

Pandey A. R., Neupane T., Chalise B., Shrestha N., Chaudhary S., Dhungana R. R., et al. (2021). Factors associated with physical and sexual violence among school-going adolescents in Nepal: Findings from Global School-based Student Health Survey. *PLoS One* 16:15. 10.1371/journal.pone.0248566

Quinto, L. & Santos, E. (2021). Child protection practices and classroom discipline in elementary schools. Globus Journal of Progressive Education A Refereed Research Journal

Roche, S. (2020). Conceptualising children's life histories and reasons for entry into residential care in the Philippines: Social contexts, instabilities and safeguarding. *Children and Youth Services Review*.

Scharpf F., Kirika A., Masath F. B., Mkinga G., Ssenyonga J., Nyarko-Tetteh E., et al. (2021). Reducing physical and emotional violence by teachers using the intervention Interaction Competencies with Children –for Teachers (ICC-T): study protocol of a multi-country cluster randomized controlled trial in Ghana, Tanzania, and Uganda. *BMC Public Health* 21:1930. 10.1186/s12889-021-11950-y

ICT INTEGRATION IN TEACHING TECHNOLOGY AND LIVELIHOOD EDUCATION AND ITS RELATIONSHIP WITH THE ACADEMIC ACHIEVEMENT OF THE STUDENTS

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ABSTRACT

This study sought information about the level of teachers' ICT integration along: classroom and research management, effectiveness in learning and administrative support in Bambang National High School and its relationship to the academic achievement of Junior High School students. A survey questionnaire was distributed to 22 TLE teachers, 8 school heads and 60 students. The level of the students' academic achievement was determined based on their grades as reflected by DepEd School Form 9. Data gathered were treated statistically with the use of frequency count, percentage, and mean, enhancing student learning outcomes in this critical area of education. Result of the study revealed that the teachers' ICT integration to the TLE instruction was perceived to be highly effective. The students' academic performance was very satisfactory. Additionally, the respondents differed in their perceptions of teachers' technology integration to TLE in terms of administrative support and as a whole. ICT integration to TLE failed to constitute significant relationship with the academic achievement in TLE of the junior high school students. Bambang National High School should continue and expand ICT integration in TLE instruction, providing ongoing professional development for teachers and fostering a supportive environment. Differentiated teaching strategies, informed by student grades, can help meet individual learning needs, while ICT training should be tailored to each teacher's specialization. Further research on the impact of ICT on student achievement and ongoing evaluation of integration efforts is recommended to improve learning outcomes.

Keywords: academic achievement, administrative support, classroom resource management, effectiveness in learning, ICT integration

INTRODUCTION

Academic achievement is commonly described as the progress students make toward the goal of gaining educational knowledge, skills, and materials across various disciplines. It specifically refers to achievement in academic content and is often viewed without a definite endpoint. Instead, it is understood as a spectrum, where a student can develop certain skills and knowledge, with the possibility of further refining those skills and deepening their knowledge. Hence, it can be said that academic achievement plays a vital role in students' academic success, career decisions, and everyday lives.

Statistics in education reports reveal significant learning crises. For instance, nine out of fifteen students were unable to read simple texts, highlighting a lack of equitable access to quality education. In 2019, 82.4 percent of Filipinos aged 25 and above were reported to have completed primary education. However, the completion rate for secondary education dropped dramatically to 30.5%, and the completion rate for a bachelor's degree or its equivalent decreased further to 24.4%. Moreover, while 49% of individuals from the wealthiest decile attended higher education, only 17% from the poorest decile did so. On average, Filipino students spent more time in school but were less productive than their counter-

parts in other countries. Additionally, while the enrollment rate in Philippine higher education aligns with the average of middle-income countries, this is rapidly declining as neighboring countries continue to increase their enrollment rates, while the Philippines' rate has stagnated according to Philippine Business for Education (PBED, 2023).

To address these challenges related to academic achievement, Republic Act No. 10533, also known as the "Enhanced Basic Education Act" or the K–12 Program, was established in 2013. This law aimed to improve the Philippine Basic Education System by extending the duration of the basic education program and strengthening its curriculum. The K–12 Basic Education Program seeks to enable individuals to enhance their quality of life, provide students with enough time to grasp concepts, foster lifelong learning, and prepare graduates for higher education, skills development, employment, and entrepreneurship, while also preventing child exploitation and other related issues. The updated curriculum allows students to work while they study. Upon graduation, students are expected to possess skills in media, technology, information, life and career, learning and innovation, as well as effective communication.

The term "technology" is a significant consideration in many disciplines, including education, in the twenty-first century. In most countries, technology has replaced traditional methods of knowledge sharing. As technological innovations transform society, people's ways of thinking, working, and living have changed fundamentally (Grabe, 2007), as noted in Ghavifekr & Rosdy (2015). Educational institutions that aim to prepare students for life in a "knowledge society" consider incorporating ICT (Information and Communication Technology) into their curricula (Ghavifekr et al., 2015).

Information and Communication Technology integration in education refers to the use of technology -based teaching and learning processes, which are closely related to the use of educational tools in the classroom. Given that students are accustomed to technology and often learn more effectively in a technology-driven environment, integrating ICT into education is essential for successful learning (Jamieson-Procter et al., 2015). ICT also contributes significantly to the pedagogical aspects of education, helping students in nearly all subject areas, including mathematics, physics, languages, the arts, and other disciplines. Moreover, ICT provides valuable support for both teachers and students engaged in the learning process.

Teachers play an important role in preparing students for the digital age, as ICT offers a dynamic and proactive learning environment (Ghavifekr et al., 2015). To achieve better academic outcomes, ICT integration, along with the availability of well-equipped labs or workshops, can enhance the quality and productivity of students' work. In the field of Technology and Livelihood Education (TLE), however, studies have shown that ICT integration may adversely affect students' academic achievement (Limon, 2016).

The dynamic nature of technology makes its integration into teaching a challenging task. Therefore, planning for ICT use in education is considered a crucial part of educational advancement. Previous studies have shown that ICT integration is a complex process that requires strategic planning by policymakers, given the challenges involved in utilizing learning technologies, particularly in developing countries like Malaysia (Ghavifekr & Sufean, 2010, cited in Ghavifekr et al., 2015).

In the Philippines, ICT integration in education has become a significant initiative. Recognizing the benefits of ICT, the Department of Education has made considerable efforts to integrate ICT into classrooms across all subjects and grade levels through infrastructure development and teacher training. However, challenges in its implementation persist.

At Bambang National High School, it has been observed that Junior High School students, particularly, do not invest as much time and effort in what they consider "minor" subjects like TLE, compared to subjects like English, Math, or Science. They tend to view TLE as a "practical" subject that requires less effort, assuming they can pass the subject without fully engaging in lessons or completing their tasks.

For this reason, the researcher, who currently teaches TLE, decided to explore whether the integration of ICT into TLE would have a positive impact on students' academic achievement.

STATEMENT OF THE PROBLEM

This study assessed the level of ICT integration in teaching Technology and Livelihood Education and its relationship to the academic achievement of the students for the school year 2023-2024.

Specifically, this sought to answer the following research questions:

1. What is the level of the ICT integration in TLE instruction at Bambang National High School in terms of classroom and resource management, effectiveness in student learning, and administrative support?
2. What is the respondents' level of academic performance?
3. Is there a significant difference in ICT integration of TLE teachers when grouped according to their specialization?
4. Is there a significant relationship between ICT integration in TLE and level of achievement of the students?

RESEARCH METHODOLOGY

The study employed a quantitative research design and descriptive correlational method to examine the relationship between ICT integration in teaching Technology and Livelihood Education (TLE) by teachers and the academic achievement of students at Bambang National High School. Quantitative research involves gathering and interpreting numerical data, which can be used to identify trends, formulate hypotheses, examine causality, and extrapolate findings to larger populations.

In this study, the descriptive correlational method was applied. This method involves gathering data without manipulating the variables being studied. Studies using this approach avoid making direct changes to the study's environment, focusing instead on observing and analyzing existing conditions. Descriptive correlational research often uses surveys or other data collection techniques based on pre-existing information (Writer, 2020).

The descriptive-correlational method was particularly suitable for this study because it allowed for the analysis of numerical data to assess the level of ICT integration by teachers and its potential impact on students' academic achievement. By using this method, the study aimed to determine how ICT integration in teaching influenced students' performance.

The study was conducted at Bambang National High School (BNHS) in Bambang, Nueva Vizcaya.

This study included 60 junior high school TLE students from various majors or specializations, 22 teachers handling TLE subjects, and 8 school/department heads at Bambang National High School for the School Year 2023-2024. The students were selected using a stratified random sampling method, which involves dividing a population into smaller subgroups, known as strata. In stratified sampling, the strata are formed based on shared attributes or characteristics, which, in this study, were the TLE students grouped according to their specialization. Stratified random sampling is also referred to as population sampling or quota random sampling. On the other hand, the school heads and TLE teachers were identified using purposive sampling, also known as judgmental or selective sampling. In purposive sampling, the researcher deliberately selects individuals based on specific characteristics or attributes relevant to the study.

Research Instrument

The following tools were utilized to gather the necessary data for this study:

The Questionnaire on ICT Integration in Teaching TLE. This was used to assess the effectiveness of ICT integration in TLE. The questionnaire utilizes a 5-point Likert scale, offering five response options. Respondents selected one of these options to indicate their level of agreement or disagreement with the items in the questionnaire. This instrument was adapted from Ghavifekr and Rosdy (2015).

Scale	Qualitative Description	Range	Qualitative Description
5	Strongly Agree	4.50-5.00	Very High
4	Agree	3.50-4.49	High
3	Somewhat Agree	2.50-3.49	Moderate
2	Disagree	1.50-2.49	Low
1	Strongly Disagree	1.00-1.49	Very Low

Academic Achievement. This was used in order to measure the academic achievement of the respondents. This was represented by the grade of the students in TLE during the first quarter. The School Form 9 of the Department of Education was the basis.

Range	Interpretative Description
90- 100	Outstanding
85- 89	Very Satisfactory
80- 84	Satisfactory
75-79	Fairly Satisfactory
Below 75	Did Not Meet Expectation

The study made used the following statistical tools n order to arrive at the most appropriate interpretations and analyses of the data.

Frequency and Percentage. This was used to group the TLE students according to academic achievement.

Mean. This statistical tool was used to determine the level of ICT integration in teaching Technology and Livelihood Education, and the academic achievement of the students.

F-test. This was utilized to determine the significant difference in assessment of the three groups of respondents in the teachers' level of integration of TLE teachers.

Pearson Product-Moment Correlation Coefficient (Pearson-r). This was run to establish the relationship existing between the level of ICT integration in teaching TLE of teachers and the academic achievement of the student respondents.

All inferences were based on the five percent (5%) level of significance.

FINDINGS

This section serves as the culmination of meticulous data collection, analysis, and interpretation. This presents the results and discussion of the findings to the questions posted in chapter I.

Problem 1. What is the level of ICT integration in TLE instruction at Bambang National High School in terms of classroom and resource management, effectiveness in student learning and administrative support?

To get answers to this problem, the mean of the responses of TLE teachers, school heads and students, which serve as basis for determining the overall mean of each component of TLE instruction. The results are reflected in table 1.

Table 1. Respondents' Level of ICT Integration in TLE Instruction

	TLE Teachers	School Heads	Students	Overall
Classroom and Resource Management	4.63 Very High	4.60 Very High	3.75 High	4.33 High
Effectiveness on Students' Learning	4.65 Very High	4.64 Very High	3.86 High	4.38 High
Administrative Support	4.57 Very High	4.46 High	3.93 High	4.32 High
Grand Mean	**4.62 Very High**	**4.57 Very High**	**3.85 High**	**4.34 High**

As displayed in table 1, the TLE teachers, school heads, and students all together assessed the ICT integration into TLE instruction as "high" with the grand mean of 4.34.

Classroom and Resource Management. Going into the details, the TLE teachers, school heads, and students assessed ICT integration into TLE instruction along classroom and resource management as "high" with an overall mean of 4.33- 4.63 from TLE teachers and 4.60 from school heads, qualitatively described as very high, and 3.75 from the students, described qualitatively as "high." Overall the teachers rated themselves along classroom management "very high" as indicated by the mean of 4.63.

This could mean that the teachers are confident that they are capable of integrating ICT in their teaching and acknowledge the fact that because the integration of ICT attracts the students, or appeal to them, they have better concentration in their subject matter, and because they are enjoying or having fun, it is more likely the behavioral issues are reduced or even eradicated. In the process, students become more productive and can learn better. In other words, the use of ICT integration becomes successful because the teachers can create and maintain a learning environment that stimulates successful instruction which is within the parameters of classroom management. The

other way round, effective classroom management makes ICT integration into TLE instruction effectively.

Meanwhile, the school heads assessed teachers' classroom and resource management as very high with an overall mean of 4.60. Although their mean assessment is 4.60 slightly lower than the assessment of their own ICT integration, it still falls within the “very high” range. Taking the assessments of the three (3) sets of respondents, the teachers’ classroom and resource management is "high" as testified by the overall mean of 4.33. They all agree with the indicators of good classroom management, as a component of ICT integration.

This finding leaves the impression that the teachers highly value ICT integration into the teaching of TLE by effectively managing their classroom and resources well. This could mean that because they see that ICT use beneficial or advantageous to teaching, they set a classroom environment in such a way that they can efficiently use ICT for productive teaching that would result in better student learning. They can design the layout of the room so that all the students have the chance to use or manipulate ICT equipment/ facilities and to set rules, together with the students in the proper use of such. Part of this management is about managing resources, since ICT materials entail reasonable cause. Teachers have to plan, schedule and allocate resources to pursue the integration of ICT into TLE teaching.

In relation to these statements, Foster (2022) defines classroom management as the actions that teachers do to create and maintain a learning environment that stimulates successful instruction. These actions consist of decisions about structure, organization, and course activities, that support students by managing their expectations and behaviors. Effective classroom management can create a positive learning environment that: promotes an environment that is supportive of academic, social, and emotional learning; facilitates a structured and organized environment where students can concentrate in learning; establishes trust and healthy instructor- student and peer-to-peer relationships among students; maintains attention and fosters motivation and engagement; and minimizes disruption and interference in learning.

This finding implies that even if the teachers emerged to have high level of classroom management, they should not be complacent, rather they should improve more and sustain this competence since it is evidently a significant factor in ICT integration and in the teaching-learning process.

Effectiveness of Student Learning. It also appears in table 1 that ICT integration to TLE along effectiveness in student learning, obtained an overall assessment of 4.38, qualitatively described as “high” from the three groups of respondents.

To get into the details, the TLE teachers obtained a mean of 4.65 qualitatively described as very high which strongly agree that ICT allows students to be more creative and imaginative; ICT helps students find related knowledge and information for learning; ICT encourages students to communicate more with their classmates; the use of ICT increases students' confidence to participate actively in class; students learn more effectively with the use of ICT; the use of ICT helps improve students’ reading and writing abilities; students are more behaved and under control when ICT is used in teaching; ICT enables students to express their ideas and thoughts better; and the use of ICT promotes active and engaging lessons for students best learning experiences. All are qualitatively described as “very high" except one indicator on students' knowledge. paradigm being broadened by the use of ICT, which was assessed as “high”.

The “very high” rating of teachers in ICT integration in terms of effectiveness on learning is a manifestation that they acknowledge the usefulness of ICT in teaching. They must have had enough experience in the use of ICT and found it to be of great benefit in their teaching. But, the “high" assessment of the students implies that do not fully recognize or appreciate the advantages of using ICT in their learning maybe because they clamor for more hands-on activities in class- that they be given the chance to manipulate ICT gadgets to find out for themselves how to use it in their lessons and feel the joy and sense of fulfillment in what they do.

The school and department heads assessed their teachers in a similar way as the teacher themselves as very high in ICT integration along effectiveness in student learning as testified by the mean of 4.64.

This coincides with the assessment of the teachers themselves on the effectiveness of student learnings point to the teacher’s ability and competence in facilitating learning. By using ICT integration in the learning process, the students are inclined to be active in the class activities and more engaged in their lesson. These activities broaden their knowledge, information and skills.

In contrast, the students’ assessment of their teachers’ level of ICT integration is at “high” level as marked by the mean of 3.93. This could mean that there are some indicators in the student learning component that they do not observe or experience. Maybe, they know that they do not have sufficient learning opportunities, or maybe do not feel that ICT integration makes them better learners.

The implication of this finding is that teachers and school/ department heads should collaborate to strengthen the capabilities of the teachers so that they could effectively transmit knowledge and information, as well as skills and values that students are expected to learn. This way, students can say they have learned well and would appreciate the efforts of their teachers in making every learning experience meaningful.

Getting the average assessment of the three (3) groups of respondents, effectiveness on learning through ICT is "high" as attested by the overall mean of 4.32. It can be said that the three groups of respondents arrived at a consensus that the teachers’ level of ICT integration to TLE is high, but should continuously improved and sustained

for effective student learning.

Previous research has proven that ICT use in teaching enhances the learning ng process and maximizes the students' abilities in active learning, ICT helps teachers attain the global requirements in place of traditional teaching methods through technology-based teaching and learning tools and facilities. In Malaysia, ICT is considered as one of the major elements in the transformation of the country to future development. The Ministry of Education, through the latest Education Blueprint (2013-2025) articulated the importance of technology - based teaching and learning into the national curriculum of schools.

Administrative Support. Appearing in table 1 is the respondents' assessment of ICT integration in terms of administrative support. It is reflected in the table that the teachers were rated "high" in this dimension as attested by the overall mean of 4.34.

Specifically, the TLE teachers themselves evaluated ICT integration as "very high" as testified by their overall mean of 4.57. They strongly agree that teachers are given technical support when faced with difficulties; little access to ICT prevents them from using it when teaching; much support from school top management encourages them to use ICT; teaching time is enough for them to ICT for teaching-learning purposes; adequate training and professional development along ICT use in teaching are provided; teachers are given more time to learn, and be comfortable with the use of ICT in teaching; a computer lab in which students can be brought to watch educational videos is available in their school; and teachers are given the freedom to design / plan their own teaching with the help of ICT tools. They also agree that the ICT facilities in their school are well-functioning and usable and that all ICT tools do not go to waste and much used by teachers is a demonstration of their gratitude and appreciation for the support given to them by the administration and administrative support staff. The technical support they receive like trainings, provision of ICT facilities, and access to these are adequately provided. They also enjoy moral support in terms of the encouragement, motivation and inspiration as well as the freedom to design or plan how ICT can be integrated in their lessons.

On the contrary, the school and department heads rated administrative support for ICT integration as "high" as attested by the mean of 4.46. Nevertheless, they gave very high rating for teachers to use ICT for instruction; on sufficient training and professional development provided to teachers; on teachers being given time to learn and be confident with ICT use; the availability and access to the computer laboratory; and being given the freedom to plan their lessons, utilizing ICT. The school heads rated the functionality and usability of ICT facilities in their school; provision of technical support. to teachers; limited access to ICT when teaching; and encouragement of school top management to teachers in ICT integration.

It could be inferred that the school/ department heads claim to have extended administrative support to the teachers, specifically on sufficient training and professional development; giving teachers time to learn and be confident in using ICT; availability and access to the computer laboratory; and giving them freedom to plan their teaching, but a little bit lower than the rest of the indicators. Thus, they should exert more efforts to maintain those that were rated very high and upgrade those rated only high.

The students assessed this aspect as "high" with of 3.93. It can be construed that the students agree on the presence of well-functioning and usability of ICT facilities; the technical support for teachers; on little access to ICT as hindrance in the use of ICT in teaching; on school top management encouragement to teachers; having ample time to use ICT in the class; on sufficient teacher training and professional development; wise and proper use of ICT tools; providing more time for teachers to learn and be competent in the use of ICT for instruction; access of students to the computer laboratory and on teachers freedom to design their own lesson.

The lower the mean given by the students could mean that because they do not really work closely with the school/ department heads. They are directly dealing with their teachers, so if they sense that the teachers do not take advantage of the support of the administration, the students might not acknowledge the support the administration gives. These findings suggest that teachers should make students be highly aware of their school administrative support so that they will know who and where to go in case this is needed.

Overall, the three sets of respondents assessed administrative support to ICT integration as high with the exception of the assessment of TLE teachers who rated it very high. All the indicators were given high ratings ranging from 4.11 to 4.45.

It can be inferred from this finding that the school administration is supportive of ICT integration into TLE, as demonstrated by the existence of ICT facilities, technical support, teacher training and professional development especially in ICT, availability of a computer laboratory and granting teachers the discretion on how they teach and what they teach. This finding could suggest that school administrators are concerned with their teachers' personal and professional growth and development that would pave the way for successful TLE instruction.

It could be inferred further that the effectiveness of ICT integration on student learning is perceived as high, indicating that technology-enabled teaching strategies are positively impacting student outcomes. Teachers are likely employing ICT tools and digital resources to engage students effectively and facilitate deeper learning experiences in TLE subjects. Additionally, the high rating for administrative support suggests strong backing from the school administration for ICT integration in TLE instruction. This support may manifest through access to ICT resources, professional development opportunities, and policies facilitating the effective use of technology in teach-

ing and learning. Overall, the findings reflect a positive environment for ICT integration in TLE instruction at Bambang National High School, with commendable levels of classroom management, student learning effectiveness, and administrative support. Nonetheless, while a rating of "high" signifies positive progress in ICT integration, it also signals the need for ongoing reflection, refinement, and strategic planning to further enhance the effectiveness of ICT integration.

Problem 2. What is the respondents' level of academic performance?

To come up with an answer to this problem, the mean achievement grade for the first quarter was determined, the results of which appear in table 3.

Table 2. Respondents' Level of Academic Performance

Description	Grading Scale	Frequency	Percentage
Outstanding	90 – 100	12	20.00
Very Satisfactory	85 – 89	21	35.00
Satisfactory	80 – 84	18	30.00
Fairly Satisfactory	75 – 79	5	8.33
Did Not Meet Expectations	0 – 74	4	6.67
Overall Mean			**85.16**
Standard Deviation			**5.74**
Qualitative Description			**Very Satisfactory**

As depicted in table 3, the overall mean of the respondents in TLE is 85.16 with a standard deviation of 5.74. Based on School Form 9 of the respondents; 21 or 35 percent of them fall under the 85-89 grade range with the qualitative description of "very satisfactory"; 12 or 20 percent garnered "outstanding" performance level of academic performance as indicated by the means ranging from 90-100 grade range; 18 or 30 percent obtained grades ranging from 80-84; 5 or 8.33 percent were assessed as "fairly satisfactory" with grades belonging to the 75-79; and 4 or 6.67 percent did not meet expectations as marked by the grades within the grade bracket of 0-74

The standard deviation of 5.74 shows how dispersed the data in relation to the mean since the SD (5.74) is large, this indicates data points are spread further away from the mean.

It is worthy to note that the majority of the respondents - 21 and 12- have "very satisfactory" and outstanding achievement, respectively, while 18 and 5 obtained "satisfactory" and "fairly satisfactory," respectively and only 4 not meeting expectations in TLE achievements. It could be deduced that the students are at the threshold of acquiring the TLE competencies embodied in the MLC in pursuit of the school's vision and mission to develop critical thinking, self-reliance, independence, culture sensitivity and entrepreneurship in the students by enhancing their skills in the different uses of technology and application of those life skills.

Moreover, the students recognize the practically of the knowledge and skills in their daily lives, especially in their academic pursuits. In other words, students manifest outstanding or very satisfactory achievement in TLE because the activities are tailored to the competencies set in the TLE curriculum, which are meaningful, realistic, and practical at the present time wherein technology-based equipment and facilities engulf the whole academic systems. The respondents might have found the learning experiences with ICT more fun and enjoyable as they themselves engage in hands on activities.

According to Sanico (2022) the importance of TLE for most people is that through this learning area, they learn many basic skills in their daily life and as soon as they developed these skills, they can earn money, TLE helps everyone to learn simple things which are a part of necessities in everyday living.

TLE helps provide and develop their skills that will change their lives and become productive. Learning TLE reinforces the work skill training and value orientation of students throughout the grade levels and exposes them to an array of experiences that are meaningful and relevant to their development.

Aligned to these idea is the study of Alsong and Alsong (2019) which determined the extent of facilitating and learning practices of TLE teachers and the level of academic performances of students in TLE subject under the K-12 curriculum. It also delved into the presence or absence of significant difference among the ratings of TLE teachers on their practices in facilitating learning, performance of facilitating learning and the academic performance of students, and tested the existence of significant relationships between the ratings of TLE teachers in facilitating their practices in facilitating learning to students in terms of technical skills assessing learning classroom management, stakeholder linkages, recording and interpreting learning outcomes of students.

Meanwhile, the students were not fully satisfied with their said practices. The students were not also performing well in written works and quarterly examinations, but they performed better in practical works.

The practices of TLE teachers in facilitating learning to the students were balanced in all aspects, but what the students learned significantly differed. Further, the extent to which teachers practice their skills in facilitating learning is related to the students' performance.

Problem 3. Is there a significant difference in ICT integration of TLE teachers when grouped according to specialization?

To arrive at the answers to this problem the F-test was run. Table 4 reflects the results of the test.

It appears in table 4 that when the respondents are grouped according to specialization, there was a significant difference in the respondents' perceptions of ICT integration to TLE, along administrative support.

Table 4. Differences in the Respondents' Perception of ICT Integration of TLE Teachers when Grouped according to Specialization

Component/ Variable	Computed F-value	p-value	Remarks
ICT Integration of TLE Teachers along Classroom and Resource Management	1.61	0.147	Not Significant
ICT Integration of TLE Teachers along Effectiveness on students' learning	2.10	0.054	Not Significant
ICT Integration to TLE Teachers along Administrative Support	2.80	0.012	Significant
ICT Integration of TLE Teachers	4.64	0.000	Significant

The students specializing in ICT perceived ICT integration along administrative support with a mean of 4.70; cookery had 4.52; drafting with 4.17; electrical installation with 4.50; dressmaking with 4.70; shielded metal arc welding with, 4.63; agriculture with 4.75; automotive with, 4.60. When the mean differences were tested for significance using F-test, the computed F-test yielded a value of 2.80, with p-value of 0.012, which is lower than the significance value of 0.05, leading to the rejection of the null hypothesis. There is a significance difference in the respondents' ICT integration along administrative support, when grouped according to specialization.

As displayed in table 4, the respondents' perceptions on the level of ICT integration of teachers in TLE along classroom and resource management and effectiveness on students' learning did not vary, when considering specialization as testified by the computed F-value of 1.61 and p-value of 0.147 and 2.10 and p-value of 0.054, both higher than 0.05 level of significance, which led to the acceptance of null hypotheses.

Nonetheless, when taken as a whole, the respondents' perceptions of the level of TLE teachers' ICT integration, vary significantly, according to specialization. This is signified by the computed F-value of 4.64 and p-value of 0.000, which is lower than 0.05 significant level.

The significant difference in perception suggests that TLE teachers' views on ICT integration vary depending on their specific areas of specialization within the field. This finding underscores the importance of considering the diverse perspectives and needs of TLE teachers when implementing ICT integration initiatives in educational settings. It also highlights the potential implications for designing targeted professional development programs and support systems tailored to address the unique challenges and opportunities faced by teachers in different TLE specializations.

Overall, the rejection of the null hypothesis indicates that there are indeed meaningful differences in perception among TLE teachers regarding ICT integration, based on their areas of specialization. Further research could delve deeper into understanding the specific factors contributing to these differences and exploring strategies to effectively address them to enhance the overall integration of ICT in TLE instruction.

The notable discrepancy in perception among TLE teachers when categorized by specialization may stem from various factors. Firstly, the diverse array of subjects within TLE, ranging from electronics to agriculture and entrepreneurship, implies varying levels of expertise and familiarity with integrating ICT tools. Consequently, teachers' perceptions of ICT integration likely differ based on their comfort levels and experiences with technology within their specific subject domains. Additionally, the relevance and applicability of ICT resources may vary across different TLE specializations, influencing how teachers perceive their effectiveness in enhancing instruction. While some educators may view ICT as indispensable for practical demonstrations, others in more traditional vocational fields may see it as less essential.

Moreover, differences in access to ICT resources and infrastructure among TLE teachers, contingent on their specialization, could further contribute to divergent perceptions. Teachers in specialized areas with robust technological resources and training opportunities may exhibit more positive attitudes towards ICT integration, contrasting with counterparts in less resourced fields. Additionally, the instructional approaches prevalent in various TLE specializations may shape teachers' perceptions of ICT integration, with those emphasizing hands-on, experiential learning likely to view ICT as a complementary tool, while others in theory-based subjects may perceive it as less integral. Consequently, addressing these discrepancies through tailored support, resources, and professional development can foster more equitable and effective ICT integration across all TLE specializations.

To address the significant variation in perception among TLE teachers based on specialization, targeted interventions are recommended. Firstly, customizing professional development opportunities is essential. Offering specialized training sessions and workshops tailored to the unique needs and challenges of TLE teachers in various specializations can enhance their capacity to integrate ICT effectively. These initiatives should provide subject-

specific guidance and resources, empowering teachers to leverage technology in materials. This indicates that teachers are proficient in organizing and utilizing digital resources, technology-based activities and ICT tools to enhance the learning environment and optimize resource utilization.

On this note, the study of Broncano and Cuenca (2021) sought to find out the relationship between the field of specialization preferences and students' performance in TLE 9 among 120 students of Bondoc Peninsula, Agricultural High School. Results reveal that 60 or 50 % of the respondents are 15 years old; 95 0r 70 are female, majority of them prefer food, food processing as their first choice while 28 or 23% respondents' choice, cookery as their second preference. The respondents' perceptions towards their interest and attitudes were agreeable and they are aware of the needs of its community; teachers' competence in teaching and classroom management were very satisfactory; and students' academic performance was very good.

Consistent to this study is Segundo's study which dealt on the performance of Grade 9 students in TLE in the public secondary school of Urdaneta City, Pangasinan. The study made use of the descriptive method, utilizing as survey questionnaire which was adopted and content validated. The study identified the profile of the students, the written and hands-on performance in the given field of specialization, the problem faced by teachers who teach TLE, particularly home economics, cookery, and information and communication and significant relationship between the profile variables, and the written and hands-on performance were analyzed. Data indicated that the of parents and family income directly relate with their hands-on performance. Segundo(2022)

Problem 4. Is there a significant relationship between ICT integration in TLE and level of achievement of the students?

To establish the relationship between ICT integration into TLE and the TLE students' academic the Pearson-r was run, the results of which are illustrated in table 5.

Table 5. Relationship between ICT Integration in TLE and the Level of Academic Performance of Students

Variables	*r*-value	*p*-value	Qualitative Description	Decision
Integration of ICT in TLE Academic Performance	0.0958	0.467	Not Significant	Accept Null Hypothesis

As displayed in table 5, integration of ICT failed to constitute significant relationship with the TLE students' academic achievement as testified by the computed r-value of 0.0958 and p-value of 0.467, which is very much higher than the 0.05 level of significance. This has led to the acceptance of the null hypothesis.

This could be interpreted to mean that ICT integration in TLE has no significant bearing with the TLE academic achievement. This implies that even without the utilization of ICT, the students can still attain very satisfactory achievement or other way round, students may receive unsatisfactory performance even if teachers use ICT in teaching.

Several factors could have influenced these results. It is possible that the level of ICT integration in TLE was not sufficiently high to impact students' performance significantly. Additionally, other variables not considered in the study may have influenced student achievement in TLE subjects.

Overall, while the study provides valuable insights into the relationship between ICT integration and student performance in TLE, further research is needed to explore additional factors and potentially uncover more nuanced relationships. Additionally, efforts to enhance ICT integration in TLE should be continued and evaluated to determine their impact on student learning outcomes.

The absence of a significant relationship between the integration of ICT in TLE and student achievement could stem from several underlying factors. One potential reason is that ICT integration may have been insufficient or inadequately implemented within the curriculum. If the incorporation of ICT tools lacked depth or consistency, its impact on student performance may have been limited. Furthermore, the effectiveness of ICT integration depends heavily on the quality of instruction and pedagogical approach employed by teachers. Without proper training or support, educators may struggle to leverage ICT tools effectively to enhance student learning.

Disparities in access to technology among students could have influenced the relationship between ICT integration and student achievement. Unequal access to ICT resources outside of the classroom may have resulted in differential opportunities for students to benefit from technology-integrated instruction. Moreover, student achievement is influenced by a myriad of factors beyond ICT integration, including individual characteristics, socioeconomic status, and home environment. The lack of a significant relationship in the study may reflect the complex interplay of these various factors, highlighting the need for comprehensive approaches to address student learning outcomes in TLE.

Likewise, Cruz-Jesus et al. (2016) asserted that the existing evidence on the influence of ICT adoption on students' academic performance is limited and unreliable. Nevertheless, none of these studies have managed to present conclusive evidence supporting the notion that the utilization of ICT enhances students' scholastic achievement. Similarly, Lin et al. (2014) concluded that there is no substantive evidence to suggest that integrating ICT into education yields significant benefits. Venkatesh et al. (2014) also revealed negligible effects of ICT in education, attributing this to the influence of students' socioeconomic backgrounds and inherent school characteristics.

Given the conflicting findings of prior investigations, it is evident that there is a paucity of robust theoretical research supporting the benefits of ICT adoption, alongside insufficient empirical evidence regarding its impact on educational outcomes.

CONCLUSIONS

Based on the foregoing summary of findings, the following conclusions were drawn:

1. The level of ICT integration among TLE teachers at Bambang National High School, across the three components (classroom and resource management, effectiveness in learning, and administrative support), is high. These findings highlight the successful integration of ICT as a valuable tool for enhancing TLE instruction at the school.
2. The academic achievement of the Junior High School students, as reflected in School Form 9, is very satisfactory.
3. There are significant differences in the respondents' assessment of ICT integration, particularly in the areas of administrative support and overall ICT integration, when grouped according to specialization.
4. ICT integration in TLE does not exhibit a significant relationship with the academic achievement of Junior High School students.

RECOMMENDATIONS

Based on the significant findings and conclusions, the following suggestions are offered:

1. Given the high effectiveness of ICT integration in TLE instruction at Bambang National High School, it is recommended that the school continue and expand initiatives that support technology integration in teaching practices. This may involve providing ongoing professional development opportunities to help educators further enhance their skills in utilizing ICT tools effectively. Fostering a supportive environment and ensuring strong administrative backing may be essential to sustain and scale up successful ICT integration efforts.
2. Teachers may leverage students' grades to inform instructional interventions to meet individual needs. Implementing differentiated teaching strategies and providing additional support where necessary may help ensure that all learners have the opportunity to succeed academically.
3. To address the significant differences in perceptions of ICT integration among TLE teachers based on their area of specialization, it is recommended that professional development programs be anchored to the specific needs of each specialization. Workshops, seminars, and training sessions may be designed to address the unique challenges and opportunities faced by teachers in different TLE fields. Collaboration with subject matter experts and educational technology specialists may provide valuable insights and resources to support effective ICT integration.
4. Despite the lack of a significant correlation between ICT integration in TLE and students' academic achievement, further research may be needed to better understand the factors influencing student achievement in TLE and the efficacy of ICT integration in improving learning outcomes. Conducting longitudinal studies and exploring additional variables that may impact student performance may offer valuable insights into best practices for integrating ICT into TLE instruction. Furthermore, ongoing evaluation and feedback mechanisms may be essential to monitor the impact of ICT integration efforts and inform continuous improvements.

REFERENCES

Alsong, T., & Alsong, L. (2019). Facilitating learning and academic performance of students in TLE under K to 12 curriculums. *International Journal of Innovative Science and Research Technology, 4* (11).

Broncano, N. & Cuenca, Z. (2021). Field of specialization preferences and students' performance in TLE 9. *IOER International Multidisciplinary Research Journal.*

Cruz-Jesus, F., Vicente, M., Bacao, F., & Oliveira, T. (2016). The education-related digital divide: An analysis for the EU-28. *Computers in Human Behavior, 56*, 72-82.
Foster, S. (2022). Classroom management for learning. University of Colorado, Center for Teaching and Learning. https://www.colorado.edu/center
Ghavifekr, S., & Rosdy, W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science, 1*(2), 175-191.
Jamieson-Proctor, R., Albion, P., Finger, G., Cavanagh, R., Fitzgerald, R., Bond, T., & Grimbeek, P. (2013). Development of the TTF TPACK survey instrument. *Australian Educational Computing, 27* (3), 26-35.
Limon, C. O., & Ekpo, E. E. (2016). Effects of ICT application on academic achievement of students in Christian religious studies in Cross River State. *International Journal of Interdisciplinary Research Method, 3*(2), 14-24.
Lin, L., et al. (2014). Determining whether commercial publishers overcharge libraries for scholarly journals in the fields of science, technology, and medicine. *The Library Quarterly, 87*(2), 150-172.
Philippine Business for Education (PBED). (2023). *Education crisis at a glance*. https://www.pbed.ph/blog
Republic Act No. 10533 s. 2013. *Implementing rules and regulations of the Enhanced Basic Education Act of 2013.* http://goo.gl/FQnkvE
Sanico, R. (2022). Importance of TLE for daily life skills. https://www.scribd.com/document
Segundo, M. (2022). Performance of Grade 9 students in Technology and Livelihood Education. *International Journal of Innovative Science and Research Technology, 7*(10).
Venkatesh, V., Croteau, A., & Rabah, J. (2014). Perceptions of effectiveness of instructional uses of technology in higher education in an era of Web 2.0. In *Proceedings of the 47th Hawaii International Conference on System Sciences (HICSS'2014)* (pp. 110-119). IEEE.
Writer, S. (2020). What is descriptive correlational method? https://www.reference.com/world-view/descriptive-correlational-method-c9155e5383f0590f

METACOGNITIVE ASSESSMENT STRATEGIES ON COMMON ERRORS IN ALGEBRA AND ITS EFFECT ON LEARNERS' LEVEL OF PROFICIENCY

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ABSTRACT

This study aimed to determine the common errors committed by Grade 7 students in solving algebra problems and to assess the effectiveness of traditional versus metacognitive assessment approaches in enhancing learner's level of proficiency. Conducted at Holy Infant Academy School of Anda, Inc. during the school year 2024–2025, the research focused on third quarter topics in Mathematics 7, particularly on algebra. A quasi-experimental design was employed involving 76 students randomly assigned to a control group (traditional assessment) and an experimental group (metacognitive assessment). Data were collected using a researcher-made questionnaire and analyzed through frequency counts, percentages, and t-tests. Findings revealed that transformation errors were the most common type of algebraic error, followed by comprehension, procedural, reading, and encoding errors. Students under the traditional assessment approach showed only slight improvements in algebra proficiency. In contrast, those exposed to the metacognitive assessment strategy demonstrated substantial gains across all skill areas—reading, comprehension, transformation, procedural, and encoding. A significant difference was observed in the posttest scores and mean gain of the experimental group compared to the control group, underscoring the effectiveness of the metacognitive approach. This study concludes that metacognitive assessment strategies significantly enhance students' understanding and performance in algebra by promoting self-reflection and critical thinking. It recommends that education program supervisors, school heads, and teachers adopt metacognitive strategies as part of classroom instruction. Students are also encouraged to engage actively in metacognitive learning to improve academic outcomes. Further research is recommended to explore the long-term effects and applicability of this strategy in other disciplines.

Keywords: Effect, Metacognitive Assessment Strategies, Common Errors in Algebra, Learners' Academic Performance

INTRODUCTION

Many students regard algebra as one of the most challenging areas in mathematics, particularly struggling with algebraic expressions. This highlights the importance for mathematics teachers to strengthen their instruction on these topics. To address these challenges, educators should develop targeted learning exercises that enhance students' strategies and assessments will help students improve their skills and confidence in algebra (Oppong et al., 2024).

In South Sulawesi Indonesia a study of Delastri and Lolang (2023) entitled "Students' conceptual error and procedural error in solving algebraic problems", states that errors and pseudospheres made by students when solving algebraic problems can be grouped into conceptual errors and procedural errors. The results of the study show that conceptual errors in algebra are caused by misconceptions about certain concepts, making equivalence between several concepts without regard to conditions, and ambiguity in interpreting mathematical symbols. Meanwhile, procedural errors are more errors at the completion stage due to the generalization of the rules.

Compayan and Dollete (2019), analyzed how students in Leyte National High School Division of Tacloban City, and found difficulties in Algebra. The findings indicate that the respondents' performance in algebraic expressions, particularly in basic knowledge and simplification, fell short of expectations.

Similarly, their achievement in equations, including basic knowledge and manipulation, did not meet the desired standards.

It has been observed that many students in Anda District, where the researcher is assigned as a mathematics teacher handling Algebra, struggle and encounter difficulties in the subject. It is not specific what particular errors are committed by the students. In response, the researcher proposed a study focusing on metacognitive assessment strategies It addresses these common errors and their impact on learners' academic performance.

Additionally, Algebra plays a crucial foundational role in the development of other mathematical fields (Cetin, 2021). Students who struggle to master algebra often face challenges across other areas of mathematics as well. This underscores the importance of algebra in math education and highlights the need for educators and training institutions to ensure algebra is well integrated into teaching frameworks. Mastery of algebra not only equips instructors to address real-life problems through mathematical modeling but also prepares them to predict and respond to future applications in a structured way. Understanding the appropriate number sets to express real-life variables mathematically is essential for practical problem-solving.

This knowledge allows educators to determine whether solutions exist for specific problems, and if so, guides them through the solution steps. Therefore, studies focused on algebra instruction can serve as valuable resources for teacher-training institutions, shaping the future of math education and supporting teachers in applying algebraic concepts effectively in everyday contexts.

According to Sugiarti and Retnawati (2019) that some students may have difficulty learning algebra. The study was conducted with the aim of obtaining information about the difficulties experienced by students of Salam 1 junior high school in solving algebra problems. The problems that arise related to learning algebra is that students have difficulty in learning algebra, so students make mistakes when solving algebra problems. Student difficulties associated with the concept of algebra is the difficulty of students in determining variables and constants.

Students who struggle with algebraic expressions at the basic education level may face challenges as they advance to more complex topics in higher education. This study's focus on identifying common errors and providing strategies for improvement aligns with the goal of ensuring that students are better prepared for their academic journey, enhancing their opportunities for success in higher education. Therefore, the findings from this research could contribute to the broader goals of Republic Act No. 9484 by supporting educational initiatives that aim to improve student outcomes and equip learners with essential skills for their future academic and career paths.

A study entitled “Students' errors in algebraic form operations based on Newman's criteria” by Saputra & Cesaria (2023) used descriptive qualitative by collecting data through algebraic operation tests and observations on grade 11 high school students. The research results showed that students often made mistakes in the basic steps of algebraic operations such as distributive, associative, and commutative. These errors arise due to a lack of understanding of basic algebra concepts. Apart from that, some students also tend to be confused in applying Newman's criteria, which refers to understanding concepts in solving problems. Another factor that influences student errors is the lack of practice in working on algebraic operations problems. Students need more practice to deepen understanding of concepts and improve skills in solving algebra problems. Also, the teachers must provide more interactive learning and motivating students to actively ask questions and discuss to help reduce student errors. The implication of this research is the need to develop more effective learning methods and increase the frequency of practice to help students understand algebra concepts better.

Moru et al. (2022) conducted a study to analyze errors and misconceptions made by Grade 8 learners in Lesotho when simplifying mathematical algebraic expressions. The researchers collected data form 95 Grade 8 learners in one high school in Lesotho, using a constructivist perspective. Thematic analysis was employed to identify common errors and misconceptions when simplifying algebraic expressions. These errors often resulted from the leaners, overgeneralizing rules from their prior knowledge to new contexts. They struggled with identifying the correct factors and applying appropriate factoring techniques. The study emphasizes the importance of addressing these errors and application of assessment and strategies to enhance learners’ understanding of simplifying algebraic expressions.

Similarly, A’yun and Lukito (2018) reported that a radical sign error was committed in the second-degree radical addition. These studies show that learners only consider the signs in between the expressions, without considering the sign.

One of the principal objectives which education must cover is helping students become autonomous and effective. Students' ability to use strategies which help them direct their motivation toward action in the direction of the meta-proposal is a central aspect to keep at the front of our minds when considering education. This is where metacognition comes into play—knowledge about knowledge itself, a component which is in charge of directing, monitoring, regulating, organizing, and planning our skills in a helpful way, once these have come into operation.

The metacognition helps autonomous students, increase consciousness about their own cognitive processes and their self-regulation so that they can regulate their own learning and transfer it to any area of their lives. It is a conscious activity of high-level thinking which allows to look into and reflect upon how we learn and to control our own strategies and learning processes. We must therefore approach a problem which is increasing in our time, that of learning and knowledge from the perspective of active participation by students. To achieve these objectives of "learning to learn" we must use adequate cognitive learning strategies, among which we can highlight those oriented toward self-learning, developing metacognitive strategies, and critical thinking.

Researchers recommend specific metacognitive strategies such as self-explanation, collaborative problem-solving, peer teaching, and active listening. These strategies encourage students to articulate their thought processes, work together to solve problems, and reflect on connections between mathematical concepts and real-life applications. Additionally, teachers are advised to use formative assessment methods like reflective questioning and think-aloud to monitor student progress and tailor instruction effectively.

The Newman Error Analysis (NEA) model is a basic approach for measuring student errors (Prakitipong & Nakamura, 2006); Zakaria & Maat, (2010) and that is what this study implemented. Newman's model is well organized and its proper implementation will serve as a standard measure of students' error, thus desired and implemented in our research on students' errors.

The five types of errors proposed by Newman (1977) that students commit in problem-solving. Reading Errors: Reading error is concerned with the student's inability to read keywords or symbols written in the mathematical problem. Comprehension Errors: Comprehension error occurs as a result of a student's inability to understand the overall meaning of the words used in the mathematical problem and then as a result, the appropriate paths for problem-solving are not taken further. Transformation Errors: This type of error occurs as a result of students' inability to transform the given question in a mathematically acceptable form and solve it or students' inability to diagrammatically represent the information given in the mathematics problem. Process Skill Errors: Students commit this blunder because they are unfamiliar with or do not know the steps required to complete the operation to get the correct and accurate answer. Process skills error also refers to the mistake of computing mathematical tasks to obtain the proper result and identify the operation. Encoding Errors: These are the errors made by students in explaining the conclusion or their final answer. Students are able to answer problems correctly, but they are unable to communicate their solutions using appropriate notation that can be taken as a conclusion. The above explanation of the Newman Error Hierarchical Model suggests that a student's inability to pass a level will hinder his/her ability to reach the final level (Encoding).

Addressing errors promptly is crucial, as both Thomas and Mahmud (2021) and Sumule et al. (2018) stress that neglecting errors in early stages can significantly affect students' future math learning, emphasizing the importance of immediate attention and analysis to identify and correct these errors to prevent their impact on succeeding problem-solving.

According to Saleh et al. (2017) the Newman Error Hierarchical Model has proven to be suitable for error identification and analysis based on students' problem-solving capabilities. Newman (1977) has been used for analyzing mathematics topics like, Series and Sequence, solving linear and quadratic equations, algebra problems and others (Agustiani and Pedai et al., 2021); (Saputri & Kamsurya, 2021).

Errors in writing formulas/equations occurred when students wrote equations that couldn't solve the problems. According to Bayos (2020), most of the students grasped what the problem was asking them to find but could not be able to determine the correct operations or sequence of steps needed, preventing them from solving the problem and resulting in transformation error. Angco (2021), incorrect illustrations are the most common transformation errors since they could not identify the relationship between the figure and could not accurately put the label or measure on it.

Similarly, Bayos (2020) also revealed that transformation error is the most common errors encountered by the students. An error which occurs when learners are unable to select a method or technique for

creating illustrations or sketches that will aid in solving the problem (Hafid, Kartono, & Suhito 2016; Suyitno, 2018 as cited in Muttaqi et al., 2021). Verzosa-Quinto and Mabansag (2023) state that transformation errors happen when there is a mistake in transforming information from a problem into a mathematical equation or solution, using incorrect formulas, or mixing incorrect procedures due to a lack of understanding of mathematical concepts, or confusion about the strategy to be used. According to Swari et al. (2020), the student should already know the mathematical sentences and plan from the transformation stage because it will affect the process skill if they cannot understand and write the solution plan.

Process errors happen when students identify the correct operation or sequence but lack the precision to execute them accurately, despite knowing the appropriate formula. On the other hand, errors in writing the solution occur due to an incorrect plan based on previous steps and incorrect execution and computation of the created equation. Errors also occur in this stage when the students perform wrong calculations (Putri & Hastari, 2022).

Lastly, the students encountered errors in writing the solutions due to incorrect calculations and answers from the previous steps as well as due to incorrect units or no units at all. Verzosa-Quinto and Mabansag (2023) also claim that encoding errors refer to inaccuracies in recording the results and applying the correct units. These errors also occur when the students are unable to get the right answer to the problem (Hafid, Kartono, & Suhito 2016; Suyitno, 2018 as cited in Muttaqi et al., 2021).

According to Verzosa-Quinto and Mabansag (2023), encoding errors refer to inaccuracies in recording the results and applying the correct units. Also, Angco (2021) said that the student solved the problem but struggled to present the solution in an acceptable written format. Encoding errors were followed by errors in drawing problem illustrations, errors in writing formulas/equations, and errors in writing solutions.

STATEMENT OF THE PROBLEM

The main purpose of this study was to identify and assess the common errors in Algebra and the strategies used by the Grade 7 Mathematics teachers of Holy Infant Academy School of Anda Incorporated, and to evaluate their effects on students' academic performance during the School Year 2024-2025.

Specifically, this study sought to answer the following questions:

1. What is the profile of Mathematics teachers in terms of:
   - 1.1 Age;
   - 1.2 Sex;
   - 1.3 Educational Attainment;
   - 1.4 Position;
   - 1.5 Number of Years as a Grade 7 Mathematics Teacher
   - 1.6 Trainings/Seminars/Workshops attended relative to Junior High School Mathematics Teaching
2. What are the common types of errors observed by the mathematics teacher in terms of:
   - 2.1 Reading Error;
   - 2.2 Comprehension Error;
   - 2.3 Transformation Error;
   - 2.4 Procedural or Basic Facts Error and;
   - 2.5 Encoding Error?
   - 3. What is the level of proficiency in solving algebraic expressions using traditional approach?
4. What is the level of proficiency in solving algebraic expressions using metacognitive strategy.
5. What is the pretest score of the control and experimental group?
6. What is the post test score of the control and experimental group?
7. Is there a significant difference between the pretest scores of the control and experimental group?
8. Is there a significant difference between the pretest and posttest scores of the control and experimental groups?
9. Is there a significant difference between the pretest and posttest mean gain of the control and experimental groups?
10. Based on the findings, what action plan may be proposed based from the result of the study?

RESEARCH METHODOLOGY

A quasi-experimental design was employed in this study. Pretests were conducted and results were analyzed. The common errors were analyzed using Newman Error Analysis to identify the most frequent errors such as reading, comprehension, transformation, procedural, and encoding errors. Traditional Approach and Metacognitive Assessment are utilized and applied by teacher, after 3 weeks of exposure, posttest was provided to determine the significant difference from their pretest to posttest scores. Also, to evaluate the effectiveness of the interventions.

The study utilized adopted items from the Content Analysis Pretest and Posttest Questionnaire developed by Harold Lasswell (1942), which were administered to learners to determine their level of performance before and after the implementation of strategies. The Content Analysis Questionnaire focused 60% on Knowledge, 30% on Comprehension, and 10% on Higher-Order Thinking Skills (HOTS).

The teacher-responder demographic profile component determined their Age, Sex, Educational Attainment, Position, Number of Years as Grade 7 Msathematics Teacher, and Trainings/Seminars/ Workshops attended relative to Junior High School Mathematics. A guideline for scoring students' ability in problem solving was adapted from Rohmah and Sutiarso (2017).

It has a detailed guide on how to score the students output in problem solving and is aligned with Newman Error Analysis. On the teacher-made assessment test. The researcher designed assessment test served as both the pretest and posttest for the study. This test was developed based on the concepts related to algebra. Its preparation and validation were carried out following these outlined procedures.

RESULTS AND DISCUSSION

The treated data revealed the following findings:

Table 1 presents the teacher-respondent that is 31-35 years old, female, and holds a Bachelor's degree with Master's units. They are a contractual teacher with 1 to 3 years of experience as a Grade 7 Mathematics teacher. The respondent has attended a trainings/seminars/workshops attended to Junior High School Mathematics Teaching, in Training Workshop in Teaching Mathematics in Junior High School Classes.

Table 2 shows a total of 406 errors in the solution sheets of the 76 participants. It presents the results of an analysis using Newman's Error Analysis, which identifies various types of errors in a set of items.

Table 2 Common and Types of Error Identified via the Newman's Error Analysis

Type of Error	Frequency (f)	Percentage (%)
Transformation	107	26.35%
Comprehension	98	24.14%
Procedural	88	21.67%
Reading	60	14.78%
Encoding	53	13.05%
Total	**406**	**100%**

Transformation Errors (26.35%) are the most frequent. This result agrees with the study of Wijaya et al. (2014) that identified transformation as one of the most common errors committed by students while Encoding error is the lowest so far in terms of the errors committed by the students with a percentage of 13.05%

Table 3 Level of Proficiency in Solving Algebraic Expressions Using Traditional Approach

Reading Skills					
	Pretests		Posttest		
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	2	5.41	High
60 - 79	7	18.92	10	27.03	Moderate
0 - 59	30	81.08	25	67.57	Low
TOTAL	37	100%	37	100%	

Comprehension Skill					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	3	8.11	3	8.11	High
60 - 79	9	24.32	11	29.73	Moderate
0 - 59	25	67.57	23	62.16	Low
TOTAL	37	100%	37	100%	
Transformation Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	1	2.70	High
60 - 79	15	40.54	18	48.65	Moderate
0 - 59	22	59.46	18	48.65	Low
TOTAL	3	100%	3	100%	
Procedural Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	5	13.51	High
60 - 79	0	0	2	5.41	Moderate
0 - 59	37	100	30	81.08	Low
TOTAL	37	100%	37	100%	
Encoding Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	5	13.51	8	21.62	High
60 - 79	5	13.51	10	27.03	Moderate
0 - 59	27	72.97	19	51.35	Low
TOTAL	37	100%	37	100%	

Table 3 shows the level of effectiveness in addressing common errors in algebra using the traditional approach of the control group. The skill area that showed the most significant improvement is Procedural Skills. Initially, all students (100%) were performing at the low ability level.

On the other hand, the skill area that showed the least improvement is Comprehension Skill. The percentage of students in the moderate level only increased slightly by 5.41%, and the low-level category decreased by the same margin. Overall, these minimal changes suggest that comprehension skills improved the least among all the assessed areas.

Table 4 Level of Proficiency In Solving Algebraic Expressions Using Metacognitive Assessment Strategy

Reading Skills					
	Pretests		Posttest		
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	12	30.77	High
60 - 79	2	5.13	27	69.23	Moderate
0 - 59	37	94.87	0	0	Low
TOTAL	39	100%	39	100%	
Comprehension Skill					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	2	5.13	18	46.15	High
60 - 79	11	28.21	15	38.46	Moderate
0 - 59	26	66.67	6	15.38	Low
TOTAL	39	100%	39	100%	
Transformation Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	13	33.33	High
60- 79	10	25.64	17	43.59	Moderate
0 - 59	29	74.36	9	23.08	Low
TOTAL	39	100%	39	100%	
Procedural Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	0	0	18	46.15	High
60 - 79	0	0	13	33.33	Moderate
0 - 59	39	100	8	20.51	Low
TOTAL	39	100%	39	100%	
Encoding Skills					
Percentage Scores	f	%	f	%	Proficiency Level
80 -100	5	12.82	20	51.28	High
60 - 79	10	25.64	19	48.72	Moderate
0 - 59	24	61.54	0	0	Low
TOTAL	39	100%	39	100%	

Table 4 shows level of effectiveness in addressing common errors in algebra using excel of the experimental group. The skill area that showed the greatest improvement is Reading Skills. In the pretest, a significant 94.87% of students were in the low ability level, with no students in the high category.

On the other hand, the skill area that showed the least improvement is Comprehension Skill. Although there was progress, the change was less striking compared to other skills. While this still reflects a positive development, the rate of change is not as significant as in other areas such as Procedural or Reading Skills. Therefore, relative to the overall improvements observed, Comprehension Skills showed the least progress. The results demonstrate the effectiveness of the metacognitive assessment strategy in improving algebraic problem-solving skills across multiple skills.

Table 5 Student's Pretest Scores in Algebra of the Control and Experimental Group

	Pretest			
	Control Group, $N_1 = 37$		Experimental Group, $N_2 = 37$	
	f	%	f	%
33-40 (O)	1	2.70	1	2.56
25-32 (VS)	5	13.51	5	12.82
17-24 (S)	15	40.54	15	38.46
9-16 (FS)	10	27.03	9	23.08
1-8 (P)	6	16.22	7	23.08
Total	37	100%	37	100%
Mean	**$\bar{x}$=7.26**		**$\bar{x}$16.40**	

Legend:

Range	**Descriptive Interpretation (DI)**
33-40	Outstanding (O)
25-32	Very Satisfactory (VS)
17-24	Satisfactory (S)
9-16	Fairly Satisfactory (FS)
1-8	Poor

The pretest scores of students in both the control and experimental groups, as shown in the table, reveal distinct patterns of performance in algebra. Both groups had similar distributions, with the majority of students falling in the "Satisfactory" (S) and "Fairly Satisfactory" (FS) ranges. In the control group, 40.54% of students scored in the "Satisfactory" range, and 27.03% in the "Fairly Satisfactory" range. Similarly, the experimental group had 38.46% of students in the "Satisfactory" range and 23.08% in the "Fairly Satisfactory" range.

The overall mean scores indicate that the control group performed slightly better on average (mean = 17.26) compared to the experimental group (mean = 16.40). This data suggests that while both groups demonstrated similar abilities, particularly in the middle performance ranges, the experimental group had a higher proportion of students scoring in the lower performance categories. The finding is supported by the study of Pilos et al. (2020) revealed satisfactory pretest mean scores for both groups. This means that before the conduct of the study, the participants from both groups had a satisfactory performance in comprehending the text of given problems.

Table 6 Student's Posttest Scores in Algebra of the Control and Experimental Group

Range	Posttest			
	Control Group, $N_1 = 37$		Experimental Group, $N_2 = 37$	
	f	%	f	%
33-40 (O)	15	40.54	25	24.66
25-32 (VS)	13	35.14	12	9.24
17-24 (S)	9	24.32	0	2.56
9-16 (FS)	0	0	0	0
1-8 (P)	0	0	0	0
Total	37	100%	37	100%
Mean	$\bar{x} = 29.80$		$\bar{x} = 33.9$	

Legend:

Range	**Descriptive Interpretation (DI)**
33-40	Outstanding (O)
25-32	Very Satisfactory (VS)
17-24	Satisfactory (S)
9-16	Fairly Satisfactory (FS)
1-8	Poor

Table 6 presents the posttest scores in algebra for both the control and experimental groups, with a total of 74 students (37 in the control group and 37 in the experimental group). The scores are categorized into five ranges, with corresponding frequencies and percentages for each group. The mean score for the control group was 29.80 fall into Very Satisfactory, while the mean score for the experimental group was higher at 33.01 fall into Outstanding, suggesting that the experimental group performed better overall. These results indicate that the experimental intervention likely contributed to better outcomes for the experimental group compared to the control group.

This is supported by the study of P.K. and Karjanto (2023), which explores the effect of active learning on students' academic performance in mathematics. In the research, the control group participated in traditional lectures, while the experimental group engaged in active problem-solving through case studies based on real-world events. The findings revealed that the experimental group outperformed the control group, suggesting that active learning strategies contribute to better academic outcomes.

Table 7 Significant Difference between the Pretest Scores of the Control and Experimental Group of Students

Mean Scores		∝	p-value	Interpretation	Decision
Control Pretest	Experimental Pretest				
17.26	16.40	0.05	0.077	Insignificant	Do Not Reject H_o

Table 7 presents the insignificant difference between the pretest of the control and experimental groups of the student's performances as indicated in their test scores in Algebra. The student's scores before the study got a mean score of 17.2.5 and 16.40 for the control and the experimental group respectively. The computed p-value of 0.077 is greater than the 0.05 level of significance. The results warrant the acceptance of the null hypothesis. It implies that there is no significant difference in the pretest of both groups of students. It means that students have almost equal achievement at the start of the study.

The study of Pillos et al. (2020) revealed that there is no significance in pretest of both groups as majority of the participants from both groups have fair performance in the pretest. This means that most of the participants find difficulty in creating and solving a numerical equation in Algebra both the control and experimental group.

Table 8 Significant Difference between the Pretest and Post Test of the Control and Experimental Group of Pupils

Mean Scores		∝	p-value	Interpretation	Decision
Control Posttest	Experimental Posttest				
29.80	33.9	0.05	0.045	Significant	Reject H_o

Table 8 presents the significant difference between the pretest and posttest scores of the control and experimental groups based on students' performance in Algebra. The computed p-value of 0.045 is less than the 0.05 level of significance; therefore, the null hypothesis is rejected.

Table 9 Significant Difference between the Pretest and Post Test Mean Gain of the Control and Experimental Group of Pupils

Group	Mean Scores		Mean Gain	∝	p-value	Interpretation	Decision
	Pretest	Posttest					
Control	17.25	29.80	12.55	0.05	0.0421	significant	Reject H_o
Experimental	16.40	33.9	17.46	0.05	0.0148	significant	Reject H_o

Table 9 shows the significant difference between the Pretest and Post Test mean gain of the control and experimental Groups of Pupils. A difference of 12.55 and 17.46 in the computed mean in the pretest and posttest of the experimental and control group was significant, with the calculated p-value of 0.0421 and 0.0148, are lesser than the critical value of 0.05.

The result signifies that using metacognitive as a teaching strategy in teaching Algebra made a difference against their pre-test scores. This implies that both the experimental and control group performs better after the conduct of the study. It can be noted that there is also a difference in the mean gain in the control group, in which the experimental group had a greater mean gain compared to the control group.

CONCLUSIONS

The application of a metacognitive assessment strategy in the experimental group notably improved their performance, as shown by the posttest scores. The findings indicate that this strategy contributed to a substantial shift in students' performance levels, with many moving from a satisfactory to an outstanding level, particularly in reading, comprehension, transformation, procedural and encoding skills. Furthermore, the experimental group demonstrated a higher mean score on the posttest compared to the control group, highlighting the positive impact of metacognitive strategies on students' academic achievement. The observed improvements in performance, alongside the increased mean scores, emphasize the effectiveness of metacognitive assessment in fostering a deeper understanding of algebraic concepts and enhancing student engagement.

REFERENCES

Ababon, J. B., Sumicad, R. P., Razonable, S. Y., Tesorio, G. T., Cagay, J. V., & De Vera, J. P. (2024). *Strategies and common errors in solving basic Mathematics Problems among University of Cebu-Main Freshman BEED Students*. British Journal of Teacher Education and Pedagogy, 3(1), 01-16

Adnan, M., Abidin, Z. Z., Mustam, A. A., Maat, S. M., Sutama, S., Prihaswati, M., & Zulnaidi, H. (2021, July*). The ability and analysis of Students' errors in the topic of algebraic expression.* In Journal of Physics: Conference Series (Vol. 1988, No. 1, p. 012049). IOP Publishing.

Baybayon, G. G., & Lapinid, M. R. C. (2024). *Students' common errors in quadratic equations: Towards improved mathematics performance*. Infinity Journal, 13(1), 83-98.

Beeh, H., Rosjanuardi, R., &., Jupri, A. (2018). *Investigating the misconception of students in initial algebra*. International Conference on Mathematics and Science Education of Universitas Pendidikan Indonesia 3, 733-738,2018

Bıkmaz, F. H., Çeleb, Ö., Ata, A., Özer, E., Soyak, Ö., & Reçber, H. (2010). *Scaffolding strategies applied by student teachers to teach mathematics.* The International Journal of Research in Teacher Education, 1(3), 25-36.\

Bishop, J. W., Otto, A. D. & Lubinski, C. A. (2001*). Promoting algebraic reasoning using students' thinking*. Mathematics Teaching in the Middle School, 6(9), 508-514.

Blakey, E., & Spence, S. (1990). *Thinking for the future*. Emergency Librarian, 17(5), 11-13.

Brown, A. L. (1987). *Metacognition, executive control, self-regulation, and other even more mysterious mechanisms.* In F. E. Weinert, & R. H. Kluwe (Eds.), Metacognition, motivation and understanding (pp. 65-116). Hillsdale, Nj: Lawrence Erlbaum Asso

Cajori, F. (1999). A history of mathematics (Vol. 303). American Mathematical Soc.

Callou, T. G. C., & Pereira, L.B.D. (2021). *Error analysis in the resolutions of 1st year High School students in the study of notable products and polynomial factoring.* International Journal of Advanced Engineering Research and Science-IJAERS 8, 6, 2021

ÇETIN, Ö. F. (2021). *The importance of algebra teaching; daily life variables and number systems corresponding to these variables*. International Journal of New Trends in Arts, Sports & Science Education *(IJTASE)*, *10*(5), 297-315.

Clark, K. R. (2018). *Learning theories: behaviorism*. Radiologic technology, *90*(2), 172-175.

Compayan, L. U., & Dollete, M. L. A. (2019). *Level of achievement in algebra of grade seven learners*. Asian Journal of Governance and Education (AJGE), 2(1), 66-84.

Daud, M. Y., & Ayub, A. S. (2019*). Student error analysis in learning algebraic expression: a study in secondary school Putrajaya.* Creative Education, 10(12), 2615.

Delastri, L., & Lolang, E. (2023). *Students' conceptual error and procedural error in solving algebraic problems*. Multicultural Education, *9*(1), 18-24.

Devi, K. S. (2019). *Constructivist approach to learning based on the concepts of Jean Piaget and lev Vygotsky*. the NCERT and no matter may be reproduced in any form without the prior permission of the NCERT, *44*(4), 5-19.

Diaz, A., Hernández, C. A., & Paz, L. S. (2019, November). *Errors and difficulties in solving algebraic procedures in secondary school students*. In Journal of Physics: Conference Series (Vol. 1408, No. 1, p. 012010). IOP Publishing.

Egodawatte, G. (2011). *Secondary school students' misconceptions in algebra*. University of Toronto, Toronto

ESPELITA, GLORIA MAC PARAGAS. *"Misconceptions and Computational Errors in Algebra: An Analysis."* *Misconceptions and Computational Errors in Algebra: An Analysis* 78, no. 1 (2021): 10-10.

Ferguson, K. (2010). *Inquiry based mathematics instruction versus traditional mathematics instruction: The effect on student understanding and comprehension in an eighth grade pre-algebra classroom.*

FLAVELL,J.H.(1979)*'Metacognitive aspects of problem solving*, in RESNICK, L.B.(ed.) The nature of Intelligence, Hillsdale, NJ: Lawrence Erlbaum Associates.

Forbes, E. G. (1978). *The astronomical work of Carl Friedrich Gauss* (1777–1855). Historia Mathematica, 5(2), 167-181. https://www.sciencedirect.com/science/article/pii/0315086078900484

Gick, M. L. (1986). *Problem-solving strategies. Educational psychologist, 21*(1-2), 99-120.

https://eric.ed.gov/?q=*Common+errors+in+Factorization+Algebraic+Expressions*&id=EJ1362067

Hu, Q., Son, J.-W., & Hodge, L. (2021). *Algebra Teachers' interpretation and Responses to Student Errors in Solving Quadratic Equations*. International journal of science and mathematics education, 1-21, 2021

Kantorovich, L. (2016). *Mathematics for natural scientists.* Springer. https://link.springer.com/book/10.1007/978-3-030-91222-2

Karki, K. (2017) *Students difficulties in learning algebra at lower secondary level* (Doctoral dissertation, Department of Mathematics Education).

Lacerna, D. J. D. *Integrating Error Analysis Strategy in Developing Students' Ability in Solving Non-Routine Problems.*

Lee, Y., Capraro, M. M., Capraro, R. M., & Bicer, A. (2018). *A Meta-Analysis: Improvement of Students' Algebraic Reasoning through Metacognitive Training*. International Education Studies, 11 (10), 42-49.

Luneta, K., Makonye, J. (2013, December). *Leaners' Mathematical Errors in Introductory Differetiation: A Theoritical Framework*. US-China Education Review A, ISSN 2161 -623X (Vol. 3, No.

Makgakga, T. P. (2023). *Solving quadratic equations by completing the square: Applying Newman's Error Analysis Model to analyse Grade 11 errors.* Pythagoras, *44*(1), 1-11.

Mangarin & Caballes (2024) https://www.researchgate.net/publication/384623840_*Difficulties_in_Learning_Mathematics*_A_Systematic_Review?

Marpa, E. P. (2019). *Common Errors in Algebraic Expressions: A Quantitative-Qualitative Analysis.* International Journal on Social and Education Sciences, 1(2), 63-72.

Moru, E.K., & Mathunya, M. (2022). *A Constructivist Analysis of Grade 8 Learners' Errors and Misconceptions in Simplifying Mathematical Algebraic Expessions*. Journal of Reseach and Advances in Mathematics Education, v7 n3 p130-144 Jul 2022

Muchoko, C., Jupri, A., & Prabawanto, S. (2019, February). *Algebraic visualization difficulties of students in junior high school.* In Journal of Physics: Conference Series (Vol. 1157, No. 3, p. 032108). IOP Publishing.

Mulungye, M. M., O'Connor, M., & Ndethiu, S. (2016). *Sources of Student Errors and Misconceptions in Algebra and Effectiveness of Classroom Practice Remediation in Machakos County--Kenya*. Journal of Education and Practice, 7(10), 3

Ng, P. K., & Karjanto, N. (2023). *Enhancing academic performance: The impact of active learning in mathematical economics*. *arXiv preprint arXiv:2311.12837*.

Obeng, B. A., Banson, G. M., Owusu, E., & Owusu, R. (2024). *Analysis of senior high school students' errors in solving trigonometry*. *Cogent Education*, *11*(1). https://doi.org/10.1080/2331186X.2024.2385119

Okumuş, Ö., & Öztürk, M. (2024). *Metacognitive training for algebra teaching to high school students: An action research study*. *Learning and Motivation*, *88*, 102064.

Oppong, R. A., Adjei, E. A., Amoah, E. K., Okuleteh, E., & Larri, B. (2024). *Analyses of Pre-Service Teachers' Errors in Solving Algebraic Tasks in Ghana*. *International Journal of Mathematics and Mathematics Education*, *2*(3), 155-174.

Ozdem-Yilmaz, Y., & Bilican, K. (2020). *Discovery Learning*—Jerome Bruner. *Science education in theory and practice: An introductory guide to learning theory*, 177-190.

Pillos, Mendezabal, Tindowen , & Quilang (2020). *Effect of Mother-Tongue Based Instruction on Pupils*

Mathematical Word Problem Solving Skills.
Pournara, C., Sanders, Y., Adler, J., & Hodgen, J. (2016). *Learners' errors in secondary algebra: Insights from tracking a cohort from Grade 9 to Grade 11 on a diagnostic algebra test.* Pythagoras, *37* (1), 1-10.
Rivas, S. F., Saiz, C., & Ossa, C. (2022). *Metacognitive strategies and development of critical thinking in higher education.* Frontiers in Psychology, *13*, 913219.
Rohmah, M., & Sutiarso, S. (2017*). Analysis problem solving in mathematical using theory Newman. Eurasia Journal of Mathematics, Science and Technology Education*, *14*(2), 671-681.
Saleh, D., Camart, N., & Romo, L. (2017). Predictors of stress in college students. Frontiers in psychology, 8, 19.
Saputra, Y. A., & Cesaria, A. (2023). *Students' errors in algebraic form operations based on newman's criteria*. Jurnal Inovasi Pembelajaran Matematika: PowerMathEdu, *2*(3), 301-308.
Sarımanoğlu, N. U. (2019). *The investigation of Middle School Students' Misconceptions about Algebra*. Studies in Educational Research and Development, *3*(1), 1-22.
sLai, E. R. (2011). *Metacognition: A literature review*.
Sugiarti, L., & Retnawati, H. (2019, October*). Analysis of student difficulties on algebra problem solving in junior high school*. In Journal of Physics: Conference Series (Vol. 1320, No. 1, p. 012103). IOP Publishing.
Sutama(2021) https://www.researchgate.net/publication/358223777_*NEWMAN_ERROR_ANALYSIS_NEA_DETECTION_OF_STUDENT_LEARNING_BARRIERS_IN_PPKM_IN_MATHEMATICS_SUBJECTS*
Taban, J., & Cadorna, E. (2018). *Structure Sense in Algebraic Expressions and Equations of Groups of Students*. Journal of Educational and Human Resource Development (JEHRD) 6, 140-154, 2018
The Lawphil project (2001*). Republic Act No. 9155 (Governance of Basic Education Act of 2001)* https://lawphil.net/statutes/repacts/ra2001/ra_9155_2001.html
The Lawphil project (2003). *Republic Act No. 10533* (*Enhanced Basic Education Act of 2013*) https://lawphil.net/statutes/repacts/ra2001/ra_9155_2001.html
The Lawphil project (2007). *Republic Act No. 9484* (*Student Assistance Program for Higher Education Act of 2007*) https://lawphil.net/statutes/repacts/ra2001/ra_9155_2001.html
Uçar Sarımanoğlu, N. (2019). *The investigation of middle school students' misconceptions about Algebra.*
Widyawati, E., & Rahayu, S. W. (2018, June*). The analysis of students' difficulty in learning linear algebra.* In Journal of Physics: Conference Series (Vol. 1028, No. 1, p. 012152). IOP Publishing.
Wijaya, A., van den Heuvel-Panhuizen, M., Doorman, M., & Robitzsch, A. (2014). *Difficulties in solving context-based PISA mathematics tasks: An analysis of students' errors*. *The Mathematics Enthusiast*, *11*(3), 555-584.
Ying, C. L., Osman, S., Kurniati, D., Masykuri, E. S., Kumar, J. A., & Hanri, C. (2020). *Difficulties that Students Face when Learning Algebraic Problem-Solving.* Universal Journal of Educational Research, 8(11), 5405-5413.
Zakaria, E., & Maat, S. M. (2010). *Analysis of Students' Error in Learning of Quadratic Equations. International Education Studies*, *3*(3), 105-110.
Zepeda, C. D., Hlutkowsky, C. O., Partika, A. C., & Nokes-Malach, T. J. (2018, October 29). *Identifying Teachers' Supports of Metacognition Through Classroom Talk and Its Relation to Growth in Conceptual Learning*. Journal of Educational Psychology.

KNOWLEDGE AND PEDAGOGICAL PRACTICES ON GENDER SENSITIVITY AMONG SOCIAL SCIENCE TEACHERS

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ABSTRACT

This descriptive-correlational study investigated the knowledge level on gender issues and sensitivity, and extent of practice of four gender-sensitive pedagogies namely delivery of the subject matter, organization of learning experience, design of didactic strategies, and selection of learning evaluation of the Social Science teachers in the Legislative District 3 of Isabela, Philippines. Specifically, it examined the teachers' understanding of gender issues and sensitivity, the relationship between their knowledge and classroom practices, and proposed improvements to a gender sensitivity framework. Using a descriptive-correlational research design, the study gathered data from randomly selected Social Science teachers across five municipalities: Alicia, Angadanan, Cabatuan, Ramon, and San Mateo. Survey questionnaires, validated by experts and pilot-tested, assessed teachers' knowledge and their practices in areas such as subject delivery, learning organization, teaching strategies, and assessment methods. Data were analyzed using SPSS, employing frequency, percentage, mean, and Pearson correlation. Findings revealed that teachers demonstrate commendable knowledge of gender issues and apply gender-sensitive practices in the classroom. A significant positive correlation was observed between teachers' gender knowledge and their pedagogical practices, underscoring the importance of continuous training. However, some gaps remain, particularly in understanding gender-related laws and applying sensitivity in daily routines. To address these gaps, the study recommends the KAP-WA Gender Sensitivity Framework, which offers a culturally relevant approach to enhance gender-responsive teaching.

Keywords: Gender Sensitivity, Pedagogical Practices, Social Science teachers, Gender Issues, Education

INTRODUCTION

The terrain of gender disparities in education has undergone significant transformations in recent years. In the 21st century, cultivating a population that is not only literate but also deeply attuned to gender sensitivity has become increasingly essential. This imperative arises from the growing concerns of marginalization, subjugation, the perpetuation of role stereotypes, as well as instances of personal and structural violence, all of which can exert a lasting and pervasive influence on our daily existence. It is within this framework that educators must recognize the vital role they play in equipping Filipino students with the requisite knowledge and insights pertaining to gender-related issues.

The government laws have assured the upliftment of gender equality and anti-discrimination efforts, to counteract instances of stereotyping of roles, marginalization, and personal and structural violence. The Global Education 2030 Framework for Action for the implementation of Sustainable Development Goal (SDG) 4, which supports inclusive and fair quality education and lifelong learning for all, highlights that gender equality in education cannot be reached without taking strong action. This includes creating gender-sensitive policies, improving learning environments, including gender topics in teacher training and curricula, and addressing gender-based discrimination and violence in schools.

With regards to gender bias and discrimination in education, research has shown that they reinforce stereotypes and contribute to negative attitudes and behavior towards women and girls More than 20% of women were illiterate in 44 countries, while on average, 65% of girls and 66% of boys enrolled in secondary education worldwide, with only 39% of women and 34% of men enrolling in college or university (World Economic Forum, 2018). Ablaza (2021) accounted verbal reports by some students that they experienced teachers using harsh words, double meaning words, and "green jokes," inside the classroom and reports that some teachers inject jokes in class having double meaning, and some students felt terrible and uncomfortable about it because of the jokes labeled as "green jokes". In the Philippines, a series of critical gender issues in education demand attention. These include the underperformance of boys in comparison to girls in key educational indicators, disparities in enrollment and experiences of discrimination among indigenous people (IP), gender segregation in higher education degrees, the persistence of gender biases and stereotypes in curricula, teaching methods, materials, and media, and women's and girls' ongoing vulnerability to sexual harassment and violence within educational institutions due to a lack of safe and gender-responsive learning environments (Pimentel, 2014). This has been supported by the 2015 Education for All (EFA) Global Monitoring Report which highlighted the persistence of gender bias in textbooks and curricula in many countries, including the Philippines.

To address this issue, the national government distributes funds to develop policies and programs that promote gender equality, women's empowerment, anti-discrimination campaigns, and equal opportunities for men and women, all of which are linked to the concept of human rights.

To guarantee gender-sensitive teaching and learning, the Department of Education (DepEd) creates laws and standards that all basic schools in the country must accept and follow. Department of Education Order 32, s. 2007, the Gender-Responsive Basic Education Policy pledges to include gender equality, gender equity, gender sensitivity, non-discrimination, and human rights principles into basic education provision and governance (DepEd, 2018).Certainly, educational institutions at all levels have a tremendous responsibility to educate the kids from a gendered viewpoint. As a result, a suitable learning environment that incorporates gender and gender-sensitive pedagogy is necessary to help students acquire a positive attitude towards gender.

Pedagogy refers to what is taught, how it is taught, and how pupils learn. In terms of gender in the classroom, it focuses on teaching and learning approaches that consider the different learning requirements of both boys and girls. Gender-responsive pedagogy necessitates a complete gender-sensitive strategy in lesson preparation, teaching methods, classroom management, and performance evaluation (Plama et al., 2019). Furthermore, gender-sensitive pedagogy involves using teaching strategies tailored to achieve gender and equity goals that may differ for boys and girls as distinct groups. To promote true equality and break free from gender constraints, it's necessary to employ varied approaches for both boys and girls as groups. This approach aims to ensure that equal treatment in education helps students develop into equal citizens with the same rights and opportunities (Lualhati, 2019).

Social Science subjects serves as a vital vehicle for promoting gender equality among students by offering a comprehensive understanding of the complexities of gender dynamics and societal structures. Through these subjects, such as sociology, anthropology, and gender studies, students gain fundamental knowledge about gender, its roles, and the pervasive issue of gender-based discrimination. These subjects not only raise awareness but also encourage students to critically examine and challenge gender stereotypes and biases deeply ingrained in society. They foster critical thinking skills, enabling students to analyze social structures, institutions, and cultural norms through a gender lens, and they learn to assess how gender shapes power dynamics and influences opportunities. Hence, social science subjects equip students with competencies needed to challenge gender inequality and contribute to building a more inclusive and equitable society.

Gender-sensitivity as part of the MATATAG (Make the curriculum relevant to produce job-ready, Active and responsible citizens; Take steps to accelerate the delivery of basic education services and provision facilities; Take good care of learners by promoting learner well-being, inclusiveness learning, and positive learning environment; and Give support for teachers to teach better) Curriculum is already part of the Departments' Order. At Alicia Vocational High School, the integration of gender mainstreaming into teachers' daily instructional practices has become a fundamental commitment. It has been ensured that all educational activities and instructions are thoughtfully designed to be gender-sensitive, a commitment evident in the daily lesson logs and the formulation of assessment tests.

Biases or gender inequalities are frequently encountered in the classroom and have an impact on both the teacher and the students. It could be challenging for a female social science teacher to gain the same authority and respect from her students as her male counterparts. Additionally, there is evident gender bias among teachers to their pupils, as evidenced by their preference for one gender over another when it comes to opportunities, praise, and discipline. Bullying based on gender is also visible among students; examples include making fun of them for defying gender stereotypes. Name calling among the LGBTQ students is oftentimes observe as well.

Teachers are an important starting point for improving gender equity at school because their gender stereotyped ideas and instructional practices have been demonstrated to significantly influence gender inequalities in students (Heyder et al., 2020). As a result of this scenario, the researcher was challenged to create a study exploring the knowledge of the teacher-respondents on gender issues and Gender sensitivity and further discover the relationship between the knowledge of the teacher respondents on gender issues and gender sensitivity and their pedagogical practices in gender sensitivity. It also envisions to analyze improvements of the Gender Sensitivity framework that incorporates integration from the result of the study. The researcher was driven to improve gender mainstreaming in pedagogy by identifying instructors' gender-sensitive pedagogical practices and developing ways to further promote gender equality.

STATEMENT OF THE OBJECTIVES

This research aimed to explore the knowledge on gender issues and sensitivity, and the gender-sensitive pedagogical practices of the Social Science teachers in the Legislative District 3 of the Province of Isabela. Specifically, this sought to answer the following questions:

1.What is the knowledge of the teacher-respondents on the following:
   1.1. Gender-issues
   1.2. Gender sensitivity
2. What are the practices of the teacher-respondents on gender issues and gender sensitivity?
3. What is the relationship between the knowledge of the teacher respondents on gender issues and gender sensitivity and their pedagogical practices in gender sensitivity?
4. What improvement on the gender sensitivity framework may be proposed based on the findings of the study.

METHODOLOGY

This study employed a descriptive-correlational research design to examine the gender-sensitive pedagogical practices of Social Science teachers in Legislative District 3 of the Province of Isabela, Region II, Philippines. It described the respondents' profiles in terms of age, sex, teaching position, years of teaching experience, and number of gender-related seminars attended. It also assessed their level of knowledge on gender issues and gender sensitivity, as well as their pedagogical practices in four areas: delivery of subject matter, organization of the learning experience, design of didactic strategies, and selection of learning evaluation methods. The design was also correlational as it explored the relationship between the respondents' knowledge of gender issues and their implementation of gender-sensitive pedagogical practices. Respondents included randomly selected Social Science teachers from six municipalities: Alicia (4 teachers), Angadanan (3 teachers), Cabatuan (4 teachers), Ramon (3 teachers), and San Mateo (3 teachers), selected at a 95% confidence level.

Survey questionnaires were used to gather information needed in this study. It consisted of the level of knowledge on gender issues and sensitivity based on the study of Enoc and Gagani (2020), and the gender-sensitive pedagogical practices including the delivery of the subject matter, organization of the learning experience, design of didactics strategies, and selection of the learning evaluation from Bangayan-Manera, Vecaldo & Saquing (2020). These criteria are also based on the evaluation of a gender-sensitive teaching tool developed by Dehler et al. (2009). The instrument was validated by seven experts in the fields of education, gender sensitivity, English, and research, and pilot-tested among non-Social Science teachers at Alicia Vocational School to ensure reliability and construct validity. Prior to data

collection, formal requests for approval were submitted to the Dean of the Graduate School and the Schools Division Superintendent. The survey was administered through printed questionnaires, following a quantitative research methodology.

Data is being analyzed using the Statistical Package for Social Sciences (SPSS). Frequency and the percentage were used to describe the respondents' profiles, while mean scores determined their level of knowledge and pedagogical practices. Pearson product-moment correlation was used to determine the relationship between knowledge on gender issues and the respondents' gender-sensitive teaching practices.

RESULTS

Table 1. Knowledge of Respondent on Gender Issues

Variables	Mean	Qualitative Description
1. Familiarity with the challenges faced by transgender individuals in society.	3.38	Knowledgeable
2. Information about gender-based wage gaps in the country or industry.	3.09	Knowledgeable
3. Understanding the influence of gender roles on career choices	3.55	Very Knowledgeable
4. Familiarity about the term "domestic violence" and its potential gender specificity	3.53	Very Knowledgeable
5. Grasping the role of education in preventing gender-based violence	3.49	Knowledgeable
6.Well-versed in the representation of diverse gender identities and expressions in the media	3.12	Knowledgeable
7. Knowing the potential contribution of media in breaking gender stereotypes	3.26	Knowledgeable
8. Familiarity are you with existing laws or policies related to gender equality in your country	3.00	Knowledgeable
9. Comprehending the potential impact of legal and policy measures on promoting gender equality	3.14	Knowledgeable
10. Overall understanding of the concept of "gender equality"	3.37	Knowledgeable

The respondents' level of knowledge on gender issues. Results show that respondents are very knowledgeable about the influence of gender roles on career choices and the gender-specific nature of domestic violence, with mean scores of 3.55 and 3.53, respectively. They are also knowledgeable in areas such as transgender challenges, gender wage gaps, the role of education in preventing gender-based violence, media representation, existing gender equality laws, and the concept of gender equality, with mean scores ranging from 3.00 to 3.49.

These findings suggest a solid foundational understanding of gender issues among teachers. However, they contrast with Madriaga (2023), who noted gaps in teachers' understanding of complex gender dynamics such as stereotypes, intersectionality, and appropriate classroom responses highlighting the continued need for professional development to deepen educators' competencies in addressing gender-related concerns effectively.

Table 2. Knowledge of Respondent on Gender Sensitivity

Variables	Mean	Qualitative Description
1. Using of language and expressions that are gender sensitive.	4.51	Outstanding
2. Showing genuine respect for the gender preferences of the students.	4.68	Outstanding
3. Actively encouraging students to engage in activities that promote gender equality and sensitivity.	4.65	Outstanding
4. Emphasizing student attitudes and values that foster respect and tolerance for everyone.	4.62	Outstanding
5. Ensuring that the content of the subject matter includes values and attitudes that promote gender equality and sensitivity.	4.54	Outstanding
6. Integrating some principles of gender equality and sensitivity in class discussion.	4.56	Outstanding
7. Utilizing neutral language and representation as a criterion for learning evaluation.	4.49	Very Satisfactory
8. Demonstrating values and attitudes that promote gender equality and sensitivity.	4.69	Outstanding
9. Gives enough time for students to think before calling on them to answer or speak.	4.63	Outstanding
10. Designing a classroom seating arrangement that enables equal student participation.	4.49	Very Satisfactory
11. Employing cooperative learning activities and other teaching strategies that promote equal and active participation among students regardless of gender	4.58	Outstanding
12. Uses objective criteria in the evaluation of student performance.	4.62	Outstanding
13. Manifesting ability to prevent and deal with gender inequality in class.	4.67	Outstanding
14. Accepting and treating all students in class without biases, especially in terms of gender.	4.67	Outstanding
15. Creating a classroom environment that supports equal opportunities for all students regardless of gender.	4.71	Outstanding
16. Providing students with equal opportunities for class participation regardless of their gender.	4.67	Outstanding
17. Holding equal academic and behavioral expectations of all students regardless of gender.	4.71	Outstanding
18. Providing equal praise, punishment, and ither disciplinary measures to all students regardless of gender.	4.67	Outstanding

It has been shown that there is a very satisfactory level of knowledge by the respondents on designing a classroom seating arrangement that enables equal student participation, and on utilizing neutral language and representation as a criterion for learning evaluation, as shown by the common mean of 4.49.

On the other hand, they have been outstanding as to using language and expressions that are gender-sensitive, showing genuine respect for the gender preferences of the students, actively encouraging students in activities that promote gender equality and sensitivity, emphasizing student attitudes and values that foster respect and tolerance for everyone, and ensuring that content of the subject matter includes values and attitudes that promote gender equality and sensitivity. These has been shown by the means ranging from 4.51 to 4.68.

The teacher-respondents in LD 3 are outstanding in terms of integrating some principle of gender equality and sensitivity in the class discussion, demonstrating values and attitudes that promote gender equality and sensitivity, giving enough time for students to think before calling on them to answer or speak, and even employing cooperative learning activities and other teaching strategies that promote equal and active participation among students regardless of gender as emphasized by the mean ranging from 4.56 to 4.69.

Lastly, it has been shown that they are outstanding in terms of using objective criteria in the evaluation of student performance , manifesting ability to prevent and deal with gender inequality in class, accepting and treating all students in class without biases, especially in terms of gender, creating a classroom environment that supports equal opportunities for all students regardless of gender, providing students with equal opportunities for class participation regardless of their gender, holding equal academic and behavioral expectations of all students, and providing equal praise, punishment, and other disciplinary measures to all students regardless of gender. These have been given by the mean ranging from 4.62 to 4.71.

Table 3. Pedagogical Practices of Social Science Teachers on Gender-Sensitivity as to Delivery of Subject Matter and Organization of Learning Experiences

GENDER-SENSITIVE PEDAGOGICAL PRACTICES	Mean	Qualitative Description
Delivery of the Subject Matter		
As an educator, I…		
1. carefully select content that will help the learners attain maximum self-sufficiency in learning.	3.68	Very Much Practiced
2. present the subject matter which can be easily learned through optimal replacement, appropriate organization, and sequencing of contents.	3.64	Very Much Practiced
3. regularly check and verify the content to determine if it is within the context of the existing reality about the role of male and female in a society and government.	3.47	Very Much Practiced
4. ensure that both male and female authors and researchers are considered in my references	3.54	Very Much Practiced
5. develop lesson objectives considering cultural aspects and gender dimensions	3.55	Very Much Practiced
6. make sure that the relation between teaching content and gender is revealed	3.50	Very Much Practiced
7. see to it that students reflect about gender-related structural constraints within their domain, work environment and job market	3.50	Very Much Practiced
8. adjust my lesson content taking into consideration my male and female students' maturity, prior experiences, and social value	3.58	Very Much Practiced
9. reinforce my lesson topics with any gender issues (e.g. VAWC, women's rights, etc.).	3.60	Very Much Practiced
10. detect and counter-act one-sided content and objectives.	3.44	Much Practiced
Organization of the Learning Experience		
As an educator, I …		
1. use gender neutral spoken language during discussions	3.56	Very Much Practiced
2. give learning exercises which address for both men and women to explain their thinking and reasoning.	3.65	Very Much Practiced
3. utilize gender neutral language in all my written lesson plans/syllabus.	3.54	Very Much Practiced
4. initiate exploratory classroom activities following the prescribed guidelines of CHED and other agencies to facilitate gender mainstreaming.	3.35	Very Much Practiced
5. examine all instructional materials to determine if they are gender-biased, gender neutral or gender-sensitive.	3.46	Much Practiced
6. use examples of gender inequity in my lesson and clearly explain these issues in class.	3.50	Very Much Practiced
7. present in the learning/instructional materials (e.g. photos, examples) at the same hierarchical levels and in nonstereotypic roles.	3.53	Very Much Practiced
8. challenge traditional male and female stereotypes when giving examples to students (e.g. a female soldier or a male nurse).	3.51	Very Much Practiced
9. prioritize learning styles of my male and female students in the choice of the teaching method.	3.47	Much Practiced
10. actively discuss and analyze sexist advertising images and the media's representation of men and women	3.40	Much Practiced

Table 3 shows the gender-sensitive pedagogical practices on delivery of the subject matter and organization of the learning experiences of the social science teachers in LD 3. It has been regarded that they practiced very much the careful selection of content that will help the learners attain maximum self-sufficiency in learning, presenting the subject matter which can be easily learned through optimal replacement, appropriate organization, and sequencing of contents, ensuring that both male and female authors and researchers are considered in their references, and even developing lesson objectives considering cultural aspects and gender dimensions. These have been proven by the means ranging from 3.50 to 3.68.

In addition, it has also been very much practiced they make sure that the relation between teaching content and gender is revealed, see to it that students reflect about gender-related structural constraints within their domain, work environment and job market, adjusting their lesson content taking into consideration their male and female students' maturity, prior experiences and social value, and reinforcing their lesson topics with any gender issues as shown by the mean ranging from 3.50 to 3.58.

Meanwhile, it has been much practiced that they are regularly checking and verifying the content to determine if it is within the context of the existing reality about the role of male and female in a society and government and are detecting counter-act one-sided content and objectives as shown by the mean of 3.47 and 3.44.

The findings are contradictory to the result of the study conducted by Madriaga (2023) where the delivery of subject matter when it comes to gender-sensitive pedagogical practices is often observed which ranked third highest among the four dimensions. However, this still notes that the teachers are gender-sensitive in teaching.

As to the organization of the learning experience, it has been very much practiced that they use gender neutral spoken language during discussions, give learning exercises which address for both men and women to explain their thinking and reasoning, they utilize gender neutral language in all their written lesson plans/syllabus, initiate exploratory classroom activities following the prescribed guidelines of CHED and other agencies to facilitate gender mainstreaming, use examples of gender inequity in their lesson and clearly explain these issues in class, present in the learning/instructional materials This was manifested on the means ranging from 3.50 to 3.65.

On the contrary, they practice much the initiative of exploring classroom activities following the prescribed guidelines of CHED and other agencies to facilitate gender mainstreaming, examine all instructional materials to determine if they are gender-biased, gender-neutral or gender-sensitive, prioritize learning styles of male and female stereotypes when giving examples to students, and actively discuss and analyze sexist advertising images and the media's representation of men and women as shown by the means less than 3.50.

The study's finding again contrast with the study of Ballado, Perez, and Aquino (2022) where the faculty members of the University of Eastern Philippines manifested that the pedagogical practices in terms of delivery of subject matter, design of didactic strategies, and selection of learning evaluation were very much practiced while practices along organization of the learning experience was much practiced.

The findings of the study implies that Social Science teachers are mindful of how they structure learning experiences to ensure that all students, regardless of gender, feel valued, respected, and included in the educational process promoting gender equality and awareness within the classroom setting.

Table 4. Pedagogical Practices of Social Science Teachers on Gender-Sensitivity as to Design of Didactic Strategies and Selection of Learning Evaluation

GENDER-SENSITIVE PEDAGOGICAL PRACTICES	Mean	Qualitative Description
Design of Didactic Strategies		
As an educator, I...		
1. call on or talk to both male and female students in a balanced way	3.73	Very Much Practiced
2. always address male and female students equally and with similar stimulating demands.	3.73	Very Much Practiced
3. give all students the opportunity to take part in class by doing some activities in small groups of three to four students.	3.76	Very Much Practiced
4. look at my male and female learners as unique individuals, and not through gender-biased perspectives.	3.78	Very Much Practiced
5. encourage students to engage in activities that may help them step outside their gender's comfort zones (e.g. sports, drama, dance, etc.).	3.82	Very Much Practiced
6. help promote gender equality and sensitivity inside the classroom through giving equally intensive and constructive feedback to male and female students.	3.77	Very Much Practiced

7. establish a set of rules with my students from the very beginning to promote ownership.	3.68	Very Much Practiced
8. provide enough time for my male and female students to answer a question at least four to five seconds.	3.69	Very Much Practiced
9. make a seating plan that supports equal participation regardless of their sex	3.56	Very Much Practiced
10. avoid interacting to students who only sit in front of the class to ensure equal participation	3.62	Very Much Practiced
Selection of the Learning Evaluation		
As an educator, I...		
1. ensure that my male and female students perform equally well in learning outcome measures.	3.78	Very Much Practiced
2. use professional judgment in developing the problem, question, or statement, and scoring the final product regardless of sex	3.81	Very Much Practiced
3. use gender-neutral language and representation as a criterion for learning evaluation.	3.64	Very Much Practiced
5. utilize gender neutral words, examples, images, in my test papers, activity sheets and the like	3.55	Very Much Practiced
6. choose an objective criterion in the evaluation of my male and female students performance in class.	3.71	Very Much Practiced
7. am careful not to limit what I ask my students to perform (e.g. ask female students to take the role of a police officer or carpenter).	3.68	Very Much Practiced
8. observe non-verbal forms of communication (e.g. attentiveness to lessons, signs of frustrations) to objectively record their areas of strengths and weaknesses.	3.71	Very Much Practiced
9. make certain that prejudice and stereotypes are not adopted in my feedback and learning evaluation methods.	3.59	Very Much Practiced
10. include gender competence in my learning evaluation/criteria.	3.63	Very Much Practiced

Table 4 shows the gender-sensitive pedagogical practices on design of didactic strategies and selection of the learning evaluation of the social science teachers in LD 3 as perceived by themselves.

As to the design of the didactic strategies, the respondents have "very much practicing" that they call on or talk to both male and female students in a balanced way, always address both genders equally and with similar stimulating demands, give all students the opportunity to take part in class by doing some activities in small groups of three to four students, look at both genders as unique individuals, and not through gender- biased perspectives, and encourage students to engage in activities that may help them step outside their gender's comfort zone. This has been revealed by the means ranging from 3.73 to 3.78.

The same finding has been shown that they have been very much practicing the promotion of gender equality and sensitivity inside the classroom through giving equally intensive and constructive feedback to male and female students, provide enough time for both genders to answer questions at least 4-5 seconds, establish sets of rules for students from the very beginning to promote ownership, make seating plan that supports equal participation regardless of their sexes, and that avoid interacting to students who only sit in front of the class to ensure equal participation. This has been shown by the means ranging from 3.56 to 3.77.

Meanwhile, as to the selection of the learning evaluation, the respondents have been very much practicing that they ensure that both genders perform equally well in learning outcome measures, use professional judgement in developing the problem, question, or statement, and scoring the final product regardless of sex, use gender-neutral language and representation as a criterion for learning evaluation, and utilize gender neutral words, examples, images, in test papers, activity sheets and the like. This has been manifested by the means ranging from 3.55 to 3.81.

In relation, they also have been very much practicing to choose objective criterion in the evaluation of their students' performance in class, careful not to limit what they ask their students to perform, observe non-verbal forms of communication to objectively record their areas strengths and weaknesses, make certain that prejudice and stereotypes are not adopted in their feedback and learning evaluation methods, and include gender competence in their learning evaluation/criteria. This was revealed by the means ranging from 3.59 to 3.71.

The result agrees with the study of Enoc and Gagani (2019) that shows a teacher who practices gender sensitivity exemplifies values and behavior that support gender equality and sensitivity. Hence, the findings above show that as the Social Science teachers highly integrate gender-sensitive pedagogy, they tend to practice giving equally intensive and constructive feedback to a male and female student, which fosters gender equality and sensitivity in the classroom. This notion was also evident in the study of Hussain(2017), that teachers employ a variety of interventions and tactics to ensure that every student has an equal chance to learn and develop their knowledge and skills.

However, a contradictory result has been shown by Yuden, Chuki, and Dorji (2020) about the teachers in Bhutan where they were not gendered sensitive in pedagogical practices in the secondary education level. There were challenges in understanding gender in education both by teachers and students. There was neither gender awareness nor conscious effort made by teachers to address gender inequality in the classroom. A gender-responsive education that supports the realization of student full potential requires the teachers to practice gender-sensitive pedagogy. To address the issue, there is an immediate need for gender awareness and sensitization among teachers and school leaders.

Table 5. Relationship Between Knowledge of Respondent on Gender Sensitivity and Their Pedagogical Practices in Gender-Sensitivity in Terms of the Delivery of the Subject Matter and Organization of the Learning Experience

Gender-Sensitive Pedagogical Practices	**r-value**	**p-value**
Delivery of the Subject Matter		
As an educator, I…		
1. carefully select content that will help the learners attain maximum self-sufficiency in learning.	0.44*	0.00
2. present the subject matter which can be easily learned through optimal replacement, appropriate organization, and sequencing of contents.	0.45*	0.00
3. regularly check and verify the content to determine if it is within the context of the existing reality about the role of male and female in a society and government.	0.40*	0.00
4. ensure that both male and female authors and researchers are considered in my references	0.51*	0.00
5. develop lesson objectives considering cultural aspects and gender dimensions	0.47*	0.00
6. make sure that the relation between teaching content and gender is revealed	0.38*	0.00
7. see to it that students reflect about gender-related structural constraints within their domain, work environment and job market	0.51*	0.00
8. adjust my lesson content taking into consideration my male and female students' maturity, prior experiences, and social value	0.34*	0.00
9. reinforce my lesson topics with any gender issues (e.g. VAWC, women's rights, etc.).	0.49*	0.00
10. detect and counter-act one-sided content and objectives.	0.43*	0.00
Organization of the Learning Experience		
As an educator, I …		
1. use gender neutral spoken language during discussions	0.35*	0.00
2. give learning exercises which address for both men and women to explain their thinking and reasoning.	0.36*	0.00
3. utilize gender neutral language in all my written lesson plans/syllabus.	0.42*	0.00
4. initiate exploratory classroom activities following the prescribed guidelines of CHED and other agencies to facilitate gender mainstreaming.	0.43*	0.00
5. examine all instructional materials to determine if they are gender-biased, gender neutral or gender-sensitive.	0.46*	0.00
6. use examples of gender inequity in my lesson and clearly explain these issues in class.	0.40*	0.00
7. present in the learning/instructional materials (e.g. photos, examples) at the same hierarchical levels and in non-stereotypic roles.	0.54*	0.00
8. challenge traditional male and female stereotypes when giving examples to students (e.g. a female soldier or a male nurse).	0.46*	0.00
9. prioritize learning styles of my male and female students in the choice of the teaching method.	0.40*	0.00
10. actively discuss and analyze sexist advertising images and the media's representation of men and women	0.49*	0.00

Table 5 shows the Relationship Between Knowledge of Respondent on Gender Sensitivity and Their Pedagogical Practices in Gender-Sensitivity in Terms of the Delivery of the Subject Matter and Organization of the Learning Experience

The r-values ranging from 0.34 to 0.51 with common p-values of 0.00 indicates that there is a significant positive correlation between the variables leading to the rejection of the null hypothesis. This means that as the level of knowledge of the respondents are getting high, the more that they practice their pedagogies in terms of delivering the subject matter. Further, this means that the increase of their knowledge on gender issues allows them to practice further on carefully selecting content that will help the learners attain maximum self-sufficiency in learning, presenting the subject matter which can be easily learned through optimal replacement, appropriate organization, and sequencing of contents, regularly checking and verifying the content to determine if it is within the context of the existing reality about the role of male and female in a society and government, ensuring that both male and female authors and researchers are considered in my references, developing lesson objectives considering cultural aspects and gender dimensions, making sure that the relation between teaching content and gender is revealed, seeing to it that students reflect about gender-related structural constraints within their domain, work environment and job market, adjusting their lesson content taking into consideration their male and female students' maturity, prior experiences, and social value, reinforce their lesson topics with any gender issues like VAWC, women's rights, and detecting and counter-acting one-sided content and objectives,

Meanwhile, the r-values ranging from 0.35 to 0.54 with p-values less than 0.05 ($p<0.05$) indicates that there is also a significant positive correlation between their level of knowledge on gender issues and their pedagogical practice in terms of organization of the learning experience. Therefore, rejecting the null hypothesis.

This means that their high level of knowledge on gender issues have a direct impact on their extent of practice on using gender neutral spoken language during discussions, giving learning exercises which address for both men and women to explain their thinking and reasoning, utilizing gender neutral language in all my written lesson plans/syllabus, initiating exploratory classroom activities following the prescribed guidelines of CHED and other agencies to facilitate gender mainstreaming, examining all instructional materials to determine if they are gender-biased, gender neutral or gender-sensitive, using examples of gender inequity in their lesson and clearly explain these issues in class, presenting in the learning materials like photos, at the same hierarchical levels and in nonstereotyped roles, challenging traditional male and female stereotypes when giving examples to students for instance a female soldier or a male nurse, prioritizing learning styles of their male and female students in the choice of the teaching method, actively discussing and analyzing sexist advertising images and the media's representation of men and women.

The finding is consistent with the study of Tarrayo et al. (2021) where teachers who are well-informed about gender issues are more likely to deliver subject matter in an inclusive manner. They incorporate diverse examples, use inclusive language, and actively address gender biases in their teaching. This approach fosters an environment where students feel valued regardless of their gender identity, promoting equitable participation and engagement. In contrast, teachers with limited knowledge of gender issues may inadvertently reinforce traditional gender norms. They might focus more on male-dominated narratives, overlook the experiences of marginalized genders, and lack confidence in addressing sensitive gender topics. This can result in a less inclusive delivery that limits the depth and breadth of students' understanding of gender issues. As a result, continuous professional development is essential for equipping teachers with the knowledge needed to create a more inclusive learning environment.

In addition, teachers with high knowledge of gender sensitivity effectively organize learning experiences to create equitable classroom environments. They design activities that promote collaboration among all genders and challenge stereotypes, ensuring balanced participation by assigning roles without bias. Additionally, these teachers are skilled at recognizing and addressing subtle gender dynamics, such as unequal participation or exclusion, thereby providing all students with equal opportunities to contribute and engage in the learning process.

Table 6. Relationship between the Knowledge of the Teacher Respondents on Gender Issues and Gender Sensitivity and their Pedagogical Practices in Gender Sensitivity as to Design of Didactic Strategies and Selection of the Learning Evaluation

Gender-Sensitive Pedagogical Practices	**r-value**	**p-value**
Design of Didactic Strategies		
As an educator, I…		
1. call on or talk to both male and female students in a balanced way	0.39*	0.00
2. always address male and female students equally and with similar stimulating demands.	0.38*	0.00
3. give all students the opportunity to take part in class by doing some activities in small groups of three to four students.	0.34*	0.00
4. look at my male and female learners as unique individuals, and not through gender-biased perspectives.	0.33*	0.00
5. encourage students to engage in activities that may help them step outside their gender's comfort zones (e.g. sports, drama, dance, etc.).	0.31*	0.01
6. help promote gender equality and sensitivity inside the classroom through giving equally intensive and constructive feedback to male and female students.	0.35*	0.00
7. establish a set of rules with my students from the very beginning to promote ownership.	0.23^{ns}	0.05
8. provide enough time for my male and female students to answer a question at least four to five seconds.	0.32*	0.01
9. make a seating plan that supports equal participation regardless of their sex	0.42*	0.00
10. avoid interacting to students who only sit in front of the class to ensure equal participation	0.40*	0.00
Selection of the Learning Evaluation		
As an educator, I …		
1. ensure that male and female students perform equally well in learning outcome measures.	0.49*	0.00
2. use professional judgment in developing the problem, question, or statement, and scoring the final product regardless of sex	0.49*	0.00

3. use gender-neutral language and representation as a criterion for learning evaluation.	0.47*	0.00
4. administer exhibition or demonstration in a manner which is equivalent for all students (e.g. candidates in a music demonstration play the same piece)	0.36*	0.00
5. utilize gender neutral words, examples, images, in test papers, activity sheets and the like	0.43*	0.00
6. choose an objective criterion in the evaluation of male and female students performance in class.	0.33*	0.00
7. is careful not to limit what to ask students to perform (e.g. ask female students to take the role of a police officer or carpenter).	0.37*	0.00
8. observe non-verbal forms of communication (e.g. attentiveness to lessons, signs of frustrations) to objectively record their areas of strengths and weaknesses.	0.29*	0.01
9. make certain that prejudice and stereotypes are not adopted in feedback and learning evaluation methods.	0.25*	0.03
10. include gender competence in learning evaluation/criteria.	0.30*	0.01

The r-values ranging from 0.31 to o.42 with p-values less than 0.05 ($p<0.05$) indicates that there is a significant positive correlation between respondents' level of knowledge on gender issues and their pedagogical practices in terms of design of didactic strategies. Specifically on the practices which includes calling on or talk to both male and female students in a balanced way, always addressing male and female students equally and with similar stimulating demands, giving all students the opportunity to take part in class by doing some activities in small groups of three to four students, looking my male and female learners as unique individuals, and not through gender-biased perspectives, encouraging students to engage in activities that may help them step outside their genders comfort zones.

In addition, there is a significant relationship between their level of knowledge on gender issues and on practices on design of didactic strategies on helping promote gender equality and sensitivity inside the classroom, through giving equally intensive and constructive feedback to male and female students, providing enough time for my male and female students to answer a questions at least four to five seconds, making a seating plan that supports equal participation regardless of their sex, avoiding interacting to students who only sit in front of the class to ensure equal participation.

On the contrary, the r-value of 0.23 with p-value equal to 0.05 ($p=0.05$) indicates that there is no significant relationship between their level of knowledge on gender issues and their practice on design of didactic strategies as to establishing a set of rules with my students from the very beginning to promote ownership. Thus, leading to the acceptance of the null hypothesis.

Meanwhile, the r-values ranging from 0.25 to 0.49 with p-values less than 0.05 ($p<0.05$) indicates that there is a significant relationship between respondents' level of knowledge on gender issues and their pedagogical practice on selection of the learning evaluation specifically on aspects of ensuring that male and female students perform equally well in learning outcome measures, using professional judgement in developing the problem, question, or statement, and scoring the final product regardless of sex, using gender-neutral language and representation as a criterion for learning evaluation, administering exhibition or demonstration in a manner which is equivalent for all students examples is candidates in a music demonstration play the same piece, utilizing gender neutral words, examples, images, in test papers, activity sheets and the like.

In addition, on the aspects such as choosing an objective criterion in the evaluation of male and female student performance in class, being careful not to limit what to ask students to perform like ask female students to take the role of a police officer or carpenter, observe non-verbal forms of communication like attentiveness to lessons, signs of frustrations to objectively record their areas of strengths and weaknesses, making certain that prejudice and stereotypes are not adopted in feedback and learning evaluation methods, include gender competence in learning evaluation/criteria.

The relationship between teachers' knowledge of gender issues, their gender sensitivity, and their pedagogical practices—particularly in designing didactic strategies and selecting learning evaluations—has been explored in various studies. Mukagiahana et al. (2024) mentioned that teachers with a deeper understanding of gender issues tend to adopt more inclusive and equitable teaching practices. Training programs focused on gender-responsive pedagogy have proven effective in enhancing teachers' knowledge and application of gender-sensitive teaching methods. However, research also highlights gaps in teacher education programs. In Finland, student teachers expressed intentions to act in a gender-sensitive manner but reported insufficient training on topics like transgender and non-conforming gender issues, suggesting a need for more comprehensive education to address the full spectrum of gender identities and experiences (Castelyn, 2022).

Teachers' awareness of gender issues significantly impacts their pedagogical practices. Gender-sensitive teachers are more likely to design didactic strategies that address the unique needs of all gen-

ders. For instance, integrating gender perspectives into English Language Teaching (ELT) in the Philippines has helped create supportive spaces for LGBTQIA+ learners and encouraged educators to reflect on their own biases. (Tarrayo et al., 2021). However, even with awareness of stereotypes, some teachers unintentionally reinforce these biases through their actions, as observed in Poland, where teachers favored boys in math-related tasks and girls in language-related tasks. Gender-responsive evaluation methods are crucial for ensuring fairness by considering different learning styles and avoiding stereotypical assumptions about students' abilities.

Proposed Gender Sensitivity Framework

While the findings have shown that they have outstanding level of knowledge on gender issues and sensitivity, it is still important that this will be maintained throughout. Hence, a framework titled, KAPWA was developed as way to improve gender sensitivityThe suggested gender sensitivity policy framework was influenced by Lualhati's (2019) strategy framework, which pushes to develop gender-sensitive and responsive language educators while also promoting and enforcing gender sensitivity in the language classroom.

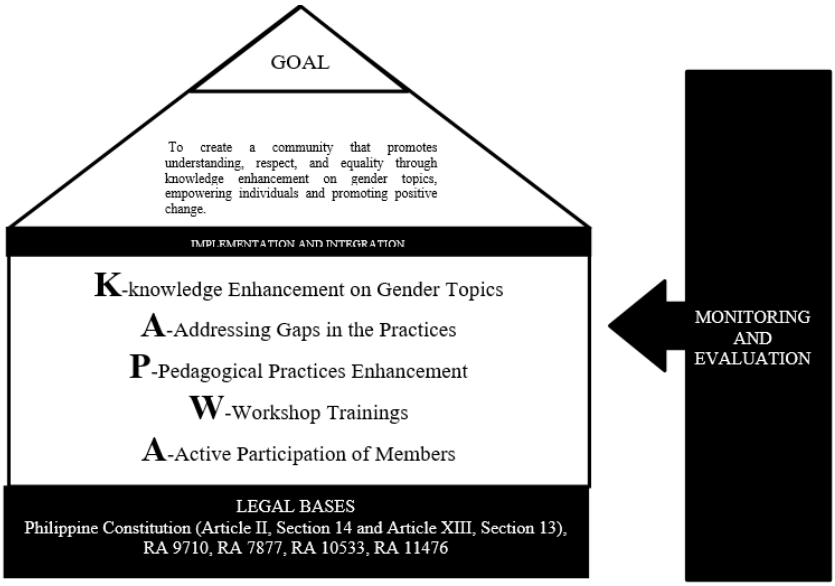

Figure 8: KAPWA : Knowledge Enhancement on Gender Topics Policy Framework

As reflected in the figure, the guiding principles of the KAPWA framework are built upon a foundation of equity, inclusion, respect, collaboration, and evidence-based practices. This champions equity and inclusion by ensuring all members, irrespective of their gender identity, expression, or sexual orientation, have equal access to knowledge and opportunities within the community.

This commitment extends to promoting an environment of respect and dignity where every individual feels safe and valued, enabling open learning and productive dialogue. Further, collaboration and empowerment are central to this approach; actively encourage members to participate, share their expertise, and contribute to a deeper collective understanding of gender-related issues. Finally, all the initiatives are grounded in rigorous research, legal and best practices, guaranteeing their effectiveness and relevance in addressing the complexities of gender dynamics.

The components of this initiative are designed to enhance knowledge, address gaps in practices, develop pedagogical practices, provide workshop training on gender, and encourage active participation among members. To enhance knowledge, it is suggested to establish a comprehensive resource hub that includes a variety of materials on gender topics, organize seminars and workshops featuring experts in the field, and facilitate peer learning sessions for members to share their insights. In addressing gaps in practices, there is a need to conduct regular needs assessments, review existing policies to align with gender equality principles, and implement targeted training programs. For pedagogical practice development, there is a create gender-sensitive curricula, provide extensive training for educators on inclusive

pedagogy, and develop pedagogical resources that support gender-sensitive teaching. Meanwhile, the workshop training will cover awareness of various gender topics, skill-building in communication and advocacy, and leadership training to empower members. Lastly, active participation may be promoted by encouraging engagement in discussions and events, establishing feedback mechanisms for continuous improvement, and supporting advocacy efforts to promote gender equality within communities.

DISCUSSION

Knowledge of the teacher-respondents on Gender-issues and Gender sensitivity

The teacher-respondents possess a commendable level of knowledge on both gender issues and gender sensitivity, underscoring their role in fostering inclusive and equitable educational environments.

In terms of gender issues, the data indicate that respondents are generally knowledgeable, particularly in understanding how gender roles influence career paths and recognizing the gender-specific nature of domestic violence. Such awareness reflects a foundational grasp of how societal norms and structures impact individuals differently based on gender. However, familiarity with gender-related laws and policies, as well as media representations of diverse gender identities, registered relatively lower scores, suggesting that while general awareness exists, more technical and policy-specific knowledge remains limited. This points to the need for deeper professional development, especially in understanding the legal and institutional frameworks that support gender equity in education.

On the other hand, the respondents demonstrated a consistently high level of gender sensitivity across pedagogical practices. Most indicators, such as the use of inclusive language, respect for students' gender identities, and equitable treatment in classroom participation and evaluation, were rated "Outstanding." These results suggest that gender-responsive teaching strategies are already being effectively applied in classrooms, contributing to learning environments where students of all gender identities feel respected and supported.

The integration of gender-sensitive approaches in teaching is vital, as it promotes fairness, encourages active participation, and reduces the risk of discrimination. However, the slightly lower scores in areas such as classroom seating arrangements and use of neutral language in assessments indicate areas for further enhancement.

Overall, the results emphasize that while teachers are effectively practicing gender sensitivity, there is room to strengthen their conceptual and legal understanding of gender issues. Addressing these gaps through sustained, policy-informed training can help ensure that gender equality is not only practiced but deeply understood and institutionally reinforced in the education sector.

The relationship between the knowledge of the teacher respondents on gender issues and gender sensitivity and their pedagogical practices in gender sensitivity

The study found a significant positive correlation between teachers' knowledge of gender issues and gender sensitivity and their pedagogical practices in four instructional dimensions: subject matter delivery, learning experience organization, didactic strategy design, and learning evaluation method selection. The persistent rejection of the null hypothesis across all domains demonstrates that teachers with higher degrees of gender awareness are more likely to use inclusive and equitable teaching techniques.

Higher gender awareness allows teachers to select content critically, incorporate multiple gender viewpoints, and utilize inclusive language. They are also more concerned with ensuring that male and female students feel represented and respected. This is consistent with research by Tarrayo et al. (2021) and Cagang (2023), which found that gender awareness improves inclusive instruction and equitable student involvement.

Similarly, when developing pedagogic tactics, gender-sensitive teachers encourage balanced participation, meet student needs beyond established gender roles, and guarantee that constructive feedback is offered fairly. However, not all practices—such as co-creating classroom rules—were significantly influenced by gender knowledge, implying that some instructional strategies may be based on generic pedagogy rather than gender sensitivity.

In terms of learning evaluation, the correlation shows that gender-aware teachers employ unbiased methods, apply equal assessment criteria, and avoid reinforcing gender stereotypes. These findings high-

light the importance of professional development programs that improve teachers' understanding of gender issues and promote the use of gender-responsive pedagogy across all instructional domains.

The gender sensitivity framework proposed based on the findings of the study.

The proposed KAPWA Gender Sensitivity Framework was developed in response to the research findings that, while participants exhibited an outstanding level of knowledge on gender issues, there remains a critical need to sustain and institutionalize gender-sensitive practices. The data revealed that awareness alone does not guarantee consistent application, especially in pedagogical contexts. Despite high levels of understanding, gaps were observed in how gender sensitivity is practiced, integrated into teaching strategies, and supported through continuous professional development. This disconnect highlights the need for a structured approach that bridges the gap between knowledge and action. The KAPWA Framework, therefore, was conceptualized not only to maintain existing awareness but also to deepen and translate it into meaningful, everyday practice within educational settings.

KAPWA, inspired by the strategy framework of Lualhati (2019), is anchored in Filipino cultural values and founded on principles of equity, respect, inclusion, collaboration, and evidence-based practices. Its strength lies in its contextual and cultural relevance, drawing on the Filipino concept of "kapwa" or shared identity, which fosters a deeper sense of empathy and collective responsibility. The framework addresses the identified issues by establishing systems for continuous capacity-building, regular assessments to identify existing gaps, and opportunities for both educators and learners to engage in open, respectful dialogues about gender. It aims to go beyond theoretical understanding by offering practical mechanisms such as training workshops, peer-learning sessions, and leadership development activities. These initiatives ensure that the knowledge gained is reinforced and applied in real educational contexts, thereby promoting a more gender-responsive learning environment.

From a pedagogical perspective, the KAPWA Framework is grounded in inclusive and transformative education. This approach encourages critical reflection, participatory learning, and the co-creation of knowledge, particularly around issues of identity, power, and equality. It emphasizes the need to develop gender-sensitive curricula and inclusive teaching strategies that affirm diverse gender identities and expressions. By doing so, educators are not only equipped with knowledge but also with the skills and confidence to embed gender equality in their instructional practices. The advantage of this pedagogical orientation is that it promotes long-term behavioral change, encourages reflective practice, and empowers both teachers and learners to become advocates of inclusivity and equality.

In alignment with the study's findings, the KAPWA Framework strengthens what is already working namely, the existing gender awareness among participants while addressing the evident need for sustained support, skill-building, and structural reinforcement. It is designed to institutionalize gender sensitivity through continuous learning, policy alignment, and community engagement. In doing so, it ensures that gender sensitivity is not treated as a one-time intervention but as an enduring commitment integrated into the school culture. Ultimately, the KAPWA Framework offers a holistic and sustainable solution that transforms awareness into action, creating a learning environment where respect, equity, and inclusion are not just ideals, but lived realities.

CONCLUSION

The study showed that Social Science teachers in Legislative District 3 of Isabela possess a commendable level of knowledge and sensitivity regarding gender issues, which positively influences their pedagogical practices.

This study concludes that the teacher-respondents have a commendable level of knowledge on gender issues and consistently apply gender-sensitive practices in the classroom. They show strong awareness of gender roles and discrimination, as well as inclusive teaching strategies, though there are some gaps in understanding gender-related laws and applying sensitivity in certain classroom routines.

A significant positive relationship was found between teachers' gender knowledge and their pedagogical practices, highlighting the importance of continued professional development. To address remaining gaps, the proposed KAPWA Gender Sensitivity Framework offers a culturally rooted and sustainable approach to strengthen and institutionalize gender-responsive education.

REFERENCES

Ablaza, G. G. C. (2021). Interventions in addressing gender issues in the classroom. Turkish Journal of Computer and Mathematics Education, 12(4), 1503-1510

Ballado, R. S., Perez, B. O., Aquino, J. S. (2022). Gender Sensitive Pedagogical Practices of Faculty Members in the University of Eastern Philippines. Asian Journal of Research in Education and Social Sciences, [S.l.], v. 4, n. 3, p. 23-38,

Bangayan-Manera, A, Vecaldo, R. & Saquing J. (2020). Cultural Structuring of Urok Practices: An Intercultural Communication of Bago Tribe in Kalinga, Philippines. International Journal of Psychosocial Rehabilitation.

Cagang, A. J. (2023). Gender and Development Towards Gender-sensitive Pedagogical Practices of Preservice Teachers Basis for a University GAD Program.

Do 32, S. (2017) – gender-responsive basic education policy. Department of Education. (n.d.). https://www.deped.gov.ph/2017/06/29/do-32-s-2017-gender-responsive-basic-education-policy/

Enoc, J. &Gagani, R. F. (2019). The Development Of A Gender-Sensitivity Teaching Test. 3. 17- 24. 30.

Hussain, S. (2017). A Gender Responsive Education System. LinkedIn. Retrieved April 4, 2023, from https://www.linkedin.com/pulse/genderresponsive-education-system-sadia-hussain/

Lualhati, G. P. (2019). Gender Sensitizing: Examining Filipino Educators' Pedagogical Practices and Teaching Effectiveness Asia Pacific Journal of Multidisciplinary Research Vol. 7 No.1, 67-76 February 2019

Madriaga, V. J. R. S. (2023). Gender-sensitive pedagogical practices of the English language teachers in Marinduque State College: Basis for crafting a gender sensitivity policy framework. International Journal of Arts,

Sciences and Education, 4(1), 94-108. https://ijase.org

Mukagiahana, J., Sibomana, A., & Ndiritu, J. (2024). Teachers' understanding of gender responsive pedagogy

Pimentel, M. (2014). Gender Fair Education (GFE): Teaching gender equality and non-sexist a. Learning. Program Coordinator Gender Fair Education Program Women and Gender Institute Miriam College

Tarrayo VN, Potestades RR, Ulla MB. (2021)Exploring the Gender Perspective in English Language Teaching (ELT): Voices from ELT Practitioners in Philippine Higher Education Institutions. Sex Cult. 2021;25(5):1634-1652. doi: 10.1007/s12119-021-09840-x. Epub 2021 Mar 13. PMID: 33746509; PMCID: PMC7955796.

World Economic Forum (WWE). (2018) Global Gender Gap Report. World Economic Forum.

Yuden, Y., Chuki, S., & Dorji, T. (2020). Gender sensitivity in pedagogical practices in secondary education in Bhutan. Research in Educational Policy and Management, 2(2), 38-51.

THE INFLUENCE OF MOTIVATED STRATEGIES FOR LEARNING ON LEARNERS' AUTONOMY AND BEHAVIOR DEVELOPMENT

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ABSTRACT

This study aimed to evaluate the Influence of motivated strategies for learning on learners' autonomy and behavior development of selected teachers and learners of Public Elementary and Secondary Schools of Ubay District I. The study used a descriptive survey method with a correlational research design based MSLQ. Four hundred eight (408) participants took part in the study comprising forty-eight (48) teachers, two hundred forty (240) learners from sixteen (16) public elementary schools and twenty (20) teachers, one hundred (100) learners from five (5) public secondary school from Ubay District I of Bohol. The researcher utilized questionnaire from modified MSLQ. The study revealed from the result that learners are more likely to develop autonomy when teachers apply motivational strategies that nurture both internal and external goal orientations, emphasize the importance of learning tasks, and cultivate learners' beliefs in their ability to control and succeed in their learning experiences. Further, the study confirms that there is a significant positive relationship between the learners' autonomy and their personal development behavior. This signifies that as learners become more autonomous, they take greater initiative, responsibility, and control over their own learning. They also exhibit more positive behaviors related to personal development. Both teachers and learners have a highly positive perception of motivated learning strategies, learner autonomy, and personal development behaviors. The results indicate that when teachers implement motivational strategies such as promoting task value, enhancing self-efficacy, and encouraging both intrinsic and extrinsic goals they significantly contribute to learners' personal development. Furthermore, greater learner autonomy was strongly associated with increased resilience, self-awareness, and responsibility, aligning with key educational theories such as Self-Determination Theory and self-regulated learning.

Keywords: Motivated Strategies for Learning, Learner Autonomy and Personal Development Behavior

INTRODUCTION

The education sector today is increasingly focused on developing students who are not just passive recipients of knowledge but active participants in their learning processes. Learners' autonomy is an essential component of modern education. Autonomous learners are more likely to be self-directed, motivated and capable of critical thinking. They take responsibility for their learning, which not only leads to deeper understanding and retention of knowledge but also prepares them for lifelong learning.

Teachers are the cornerstone of any educational process. Their approach to teaching and learning significantly influences students' experiences and outcomes. By engaging self-motivated learning, teachers continuously develop their skills, adapt to new educational trends, and implement innovative practices that cater to diverse student needs. As teachers refine their own practices, they are better equipped to create learning environments that encourage students' autonomy.

Classroom behavior is intricately linked to the overall learning environments. Positive behavior fosters a conducive atmosphere for learning, while disruptive behavior can significantly hinder it. When students are encouraged to take ownership of their learning, they are more likely to be engaged, motivated, and exhibit positive behavior. By using self-motivated learning strategies, teachers can not only promote autonomy but also create a classroom culture where positive behavior is the norm.

This addresses a critical need in education: the development of autonomous learners who are prepared for the challenges of the future. It also highlights the vital role of teachers in this process, suggesting that their professional growth and self-motivation are key to promoting both learner autonomy and positive classroom behavior. The findings of this research could have implications for teacher training programs, educational policies, and classroom practices, ultimately contributing to more effective and dynamic learning environments.

As observed a diverse range of learners, each exhibiting different approaches to learning. Some learners were highly motivated, showing a clear interest in their studies, actively participating in class discussions, and demonstrating effective learning strategies such as organizing their notes and seeking clarification when needed. These learners appeared to take ownership of their learning, working independently and confidently, even when faced with challenging tasks. On the other hand, there were also learners who seemed less engaged, often relying on external motivations like rewards or grades to get through assignments. They seemed to struggle with self-regulation and displayed a more passive approach to their learning.

Students who used effective learning strategies were found to perform better—such as setting their own learning goals, self-reflecting on their progress, and employing time management techniques—tended to exhibit greater autonomy in their learning process. These students seemed more motivated, not just to perform well in their studies, but to improve their skills and knowledge. They also displayed behaviors consistent with personal development, such as taking initiative to seek out additional learning resources or persevering through difficult challenges without external prompts.

In contrast, students who were less motivated and did not employ strong learning strategies appeared to rely heavily on teacher direction and external rewards. Their autonomy in the classroom was limited, and they often struggled to take initiative in their personal learning and development.

This observation led to the question of how motivated strategies for learning influence both learners' autonomy and their personal development behavior. Is there a relationship between students' intrinsic motivation, the strategies they use to learn, and their ability to work independently and take responsibility for their own growth? How do these factors affect their personal development, including behaviors like persistence, self-reflection, and goal setting?

As teachers, we play a pivotal role in this process, and our own commitment to continuous self-motivated learning can significantly impact our students. By actively engaging in our professional growth, we modeled the very behaviors and mindset we wished to instill in our learners — self-directedness, curiosity, and a passion for knowledge.

This study seeks to explore how' motivated learning strategies affect students' autonomy and behavior development. It examines the relationship between motivational techniques and students' ability to self-regulate, manage their learning, and develop key personal skills. The study aims to provide insights into how these strategies foster academic success and behavior develop.

To sum it up, the review concluded Motivated Strategies for Learning significantly contributes to learners' autonomy and behavior development. When students are motivated and apply effective learning strategies, they become more self-directed, taking responsibility for their own learning process.

In connection, Self-Determination Theory, this theory focuses on the importance of intrinsic motivation for learning. It posits that learners are more likely to be autonomous when their needs for competence, autonomy, and relatedness are meet. Teachers who engage in self-motivated learning may model autonomy, fostering an environment where learners feel empowered to take control of their own learning (Deci & Ryan, 1985).

The Republic Act No. 10533 (Enhanced Basic Education Act of 2013) closely aligned with research on motivated learning strategies and their influence on learners' autonomy and behavior development. The law emphasized a learner-centered curriculum and supported the development of self-directed learning, which study explored through strategies like goal-setting and metacognition. It also aimed to enhance critical thinking and problem-solving, which linked to positive behavior changes in students. Both the law and my research shared the goal of developing independent, lifelong learners. Thus, study integrated the principles of RA 10533 by examining how motivated strategies helped shape autonomous and behaviorally competent learners.

DepEd Order No. 42, s. 2017 (PPST) integrated well with research on the influence of motivated strategies for learning on learners' autonomy and behavior development. The PPST emphasized the importance of teacher motivation and continuous professional development, which supported the creation

of learner-centered environments that fostered autonomy. It also highlighted teaching practices that promoted self-regulation, critical thinking, and goal-setting—strategies that my study examined in relation to student independence and behavioral growth. By encouraging reflective and motivated teaching, the PPST aligned with research's findings that such strategies positively shaped learner autonomy and behavior.

In this connection, the researcher was motivated to determine how motivated strategies for learning influenced learners' autonomy and contributed to their personal behavior development, with the aim of fostering more effective, self-regulated, and lifelong learning practices.

Further, the result of this study would help the researcher in proposing an enhancement program that would strengthen learners' motivational and strategic learning skills, thereby promoting greater autonomy and sustained behavior development.

STATEMENT OF THE OBJECTIVES

The study aimed to investigate the effectiveness of teachers motivated learning strategies in promoting learners' autonomy and personal development behavior in the public school of Ubay District, Division of Bohol in the school year 2024-2025.

Specifically, it sought to answer the following questions:

1. How do the teacher perceive motivated learning strategies in terms of:
   1.1 intrinsic goal orientation;
   1.2 extrinsic goal orientation;
   1.3 task value;
   1.4 control of learning beliefs; and
   1.5 self-efficacy for learning and performance?
2. What is the learners' autonomy as perceived by the respondent in terms of:
   2.1 Goal Setting and Planning
   2.2 Self-Motivation and Initiative
   2.3 Responsibility and Self-Regulation
   2.4 Reflection and Adaptability
3. What is the learners' behavior development as perceived by the respondents in terms of:
   3.1 Self-Reflection and Personal Growth
   3.2 Skill Development for the future
   3.3 Growth Mindset and Resilience;
   3.4 Self-Improvement and Time Management; and
   3.5 Emotional Intelligence and Different Perspectives
4. Which of the following motivated learning strategies of teachers significantly predict learners' autonomy?
   4.1 intrinsic goal orientation;
   4.2 extrinsic goal orientation;
   4.3 task value;
   4.4 control of learning beliefs; and
   4.5 self-efficacy for learning and performance?
5. Which of the following motivated learning strategies of teachers significantly predict learners' development behavior?
   5.1 intrinsic goal orientation;
   5.2 extrinsic goal orientation;
   5.3 task value;
   5.4 control of learning beliefs; and
   5.5 self-efficacy for learning and performance?

RESEARCH METHODOLOGY

The study was quantitative research primarily employed the descriptive survey and correlational method. It is descriptive since the data on the perceived teaching performance is use to gather information to the current situations and conditions that helps to provide answers to the research questions.

The researcher used survey questionnaires random sampling approach and put together a descriptive survey questionnaire that participants could answer.

To understand how motivated strategies influence learners' autonomy and personal development behavior, the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1991) was used to assess students' motivational orientations and learning strategies.

Four hundred eight (408) participants took part in the study comprising forty-eight (48) teachers, two hundred forty (240) learners from sixteen (16) public elementary schools and twenty (20) teachers, one hundred (100) learners from five (5) public secondary school from Ubay District I of Bohol.

After accumulating the data, it was tallied, tabulated, collated, and subjected to descriptive and inferential statistics for evaluation and interpretation in accordance with the problems of the study.

RESULT AND DISCUSSION

The treated data revealed the following findings:

Table 1 illustrates the respondents' perception on the teachers motivated learning strategies across various domains such as intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, and self-efficacy for learning and performance. The responses reflect the perceptions of both teachers and learners respondents, with overall scores indicating the level of motivated strategies as perceived by the respondents.

Table 1. How do the Teacher perceive motivated learning strategies in terms of:

STATEMENTS	Teacher's & Learner's (Over-all)	
	WM	DI
1.1 Intrinsic Goal Orientation	3.52	HP
1.2 Extrinsic Goal Orientation	3.46	HP
1.3 Task Value	3.72	HP
1.4 Control of Learning beliefs.	3.59	HP
1.5 Self-Efficacy for Learning and Performance.	3.58	HP
Average Weighted Mean	**3.57**	**Highly Practice**

Legend:

Rating Scale	Descriptive Interpretation
3.25 - 4.25	Always (A) – Highly Practice
2.50 - 3.24	Often (O) – Moderately Practice
1.75 - 2.49	Sometimes (S) – Fairly Practice
1.00 - 1.74	Never (N) – Not Practice

The table reveals those respondents—both teachers and learners—perceive teachers' motivated learning strategies across five domains as consistently high, with all categories rated "Always (A)." In intrinsic goal orientation, strategies that challenge students and deepen content understanding were most valued, highlighting a strong focus on student-centered, curiosity-driven teaching. Extrinsic goal orientation showed that external recognition and professional validation also significantly motivate teachers, though less so than intrinsic factors. Task value emerged as the strongest predictor of engagement, with high importance placed on mastering content and applying new teaching strategies. Control of learning beliefs indicated that teachers believe in the effectiveness of their methods and feel responsible for student outcomes, though they acknowledge some external influences. Lastly, self-efficacy scores demonstrated strong confidence among teachers in their ability to deliver quality instruction and impact student success, though there was slightly less enthusiasm for adopting new strategies. The findings align with key motivational theories, suggesting that both intrinsic and extrinsic motivations play essential roles, but intrinsic goals and task value have a more sustained impact on teaching effectiveness.

Table 2 provide insight into the perceptions of respondents regarding the learners' autonomy. The responses reflect the views of both teachers and learners respondents, with overall scores indicating the level of learners' autonomy.

Table 2 How do the teacher perceive Learners Autonomy in terms of:

STATEMENTS	Teacher's & Learner's (Over-all)	
	WM	DI
2.1 Goal Setting and Planning	3.58	SA
2.2 Self-Motivation and Initiative	3.57	SA
2.3 Responsibility and Self-Regulation	3.53	SA
2.4 Reflection and Adaptability	3.55	SA
Average Weighted Mean	**3.56**	**SA (Very High)**

Legend:

Rating Scale	Descriptive Interpretation
3.25 - 4.25	Strong Agree (SA)– Very High
2.50 - 3.24	Agree (A) – High
1.75 - 2.49	Disagree (DA) – Low
1.00 - 1.74	Strongly Disagree (SD) – Very Low

Table illustrates Respondents' perceptions—both teachers and learners—regarding learners' autonomy across four dimensions: goal setting and planning, self-motivation and initiative, responsibility and self-regulation, and reflection and adaptability, with all areas receiving consistently high ratings ("Strongly Agree"). Respondents feel empowered to choose teaching methods, design materials, and manage classroom activities, reflecting a strong sense of professional autonomy and instructional creativity. They also demonstrate high levels of motivation, confidence, and initiative in experimenting with new strategies and aligning their teaching styles with institutional values. Furthermore, there is a strong commitment to adapting instruction based on student progress, taking responsibility for learning outcomes, and regularly reflecting on and adjusting teaching practices to enhance engagement and effectiveness.

However, slightly lower scores on managing professional development and adapting to diverse learning styles suggest minor challenges in these areas, possibly due to institutional constraints or limited resources. Overall, the data indicates a highly autonomous, reflective, and adaptable teaching environment that supports continuous professional growth and learner-centered instruction.

Table 3 How do teacher perceive Learners' Behavior Development in terms of:

STATEMENTS	Teacher's & Learner's (Over-all)	
	WM	DI
3.1 Self-Reflection And Personal Growth	**WM**	**DI**
3.2 Skill Development For Future	3.48	SA
3.3 Growth Mindset And Resilience	3.59	SA
3.4 Self-Improvement And Time Management	3.60	SA
3.5 Emotional Intelligent And Different Perspectives	3.55	SA
Average Weighted Mean	3.57	**Very Satisfactory**

Legend:

Rating Scale	Descriptive Interpretation
3.25 - 4.25	Strong Agree (SA)– Very High
2.50 - 3.24	Agree (A) – High
1.75 - 2.49	Disagree (DA) – Low
1.00 - 1.74	Strongly Disagree (SD) – Very Low

Table 3 Respondents demonstrate a strong commitment to behavior development, with consistently "Very Satisfactory" ratings across five key areas: self-reflection and personal growth, skill development for the future, growth mindset and resilience, self-improvement and time management, and emotional intelligence and different perspectives. Respondents value personal growth as much as academic achievement, frequently engage in reflective practices, and recognize learning as a means of developing critical life and career skills, such as problem-solving, communication, and emotional intelligence. They show proactive behaviors in improving study habits, time management, and seeking feedback, while also acknowledging the importance of resilience, adaptability, and understanding diverse perspectives. However, slightly lower scores in areas like extracurricular engagement, leadership development, and applying diverse perspectives suggest some room for deeper integration of holistic development opportunities. Overall, the findings reflect a well-rounded view of education, where learners not only strive for aca-

demic excellence but also actively pursue personal growth, autonomy, and long-term readiness for real-world challenges.

Table 4 Test of Association Between the Learners' Behavior Development and Their Profile

Variables		X^2	df	p-value	Interpretation
Behavior Development	Sex	9.29	2	0.010	Significant
	Age	7.93	2	0.019	Significant
	Grade Level	15.80	2	<.001	Significant

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

Table 4 displays the test of association between the behavior development of learners and their demographic profile. The results revealed that there is a significant association between the learners' personal development behavior and their profile in terms of sex, X2(2, N=340)=9.29, p=0.010, age, X2(2, N=340)=7.93, p=0.019, and grade level, X2(2, N=340)=15.80, p<.001. This implies that learners' personal development behavior varies significantly depending on their demographic characteristics. Moreover, certain age groups or grade levels may demonstrate more maturity and self-regulation, while differences across sexes may reflect varying developmental, social, or cultural influences that shape behavior patterns.

Table 5 reveals the summary of the regression analysis. The results unveiled that the regression model was statistically significant, F(5, 334)=86.20, p<.001, with 56.30% of variance in learners' personal development behavior (R-square=0.563, Adjusted R-square=0.557). The results of the regression coefficients denoted that the motivated learning strategies of teachers such as intrinsic goal motivation (B=0.088, p=0.028), extrinsic goal motivation (B=0.104, p=0.011), task value (B=0.181, p<.001), control of learning beliefs (B=0.206, p<.001), and self-efficacy for learning and performance (B=0.244, p<.001), are significant predictors of the learners' autonomy. This specifies that learners are more likely to develop autonomy when teachers apply motivational strategies that nurture both internal and external goal orientations, emphasize the importance of learning tasks, and cultivate learners' beliefs in their ability to control and succeed in their learning experiences. Among the predictors, self-efficacy for learning and performance emerged as the strongest contributor, underscoring the importance of confidence-building in promoting independent learning behavior.

Table 5. Multiple Linear Regression Analysis Results to determine Significant Predictors of Learners' Autonomy

Predictor		B	Beta	t	p	Interpretation
Motivated Learning Strategies	Intrinsic Goal Motivation	0.088	0.101	2.20	0.028	Significant
	Extrinsic Goal Motivation	0.104	0.121	2.57	0.011	Significant
	Task Value	0.181	0.201	3.95	<.001	Significant
	Control of Learning Beliefs	0.206	0.270	5.87	<.001	Significant
	Self-Efficacy for Learning and Performance	0.244	0.263	5.53	<.001	Significant
Constant		**0.569**		**3.92**	**<.001**	

Notes: F(5, 334)=86.20, p<.001; R-square=0.563, Adjusted R-square=0.557

The results of this regression analysis align with several studies that underscore the role of motivational strategies in fostering learners' autonomy and personal development. For instance, Zimmerman (2000) found that intrinsic goal motivation and task value significantly enhance students' self-regulated learning, which is crucial for developing autonomy. Additionally, Deci and Ryan (2000) emphasize the role of self-determination theory, suggesting that when students are encouraged to value their learning and believe in their own capabilities, they are more likely to demonstrate autonomous learning behaviors.

Moreover, Schunk (1989) highlighted that learners' self-efficacy for learning and performance is a key determinant of their academic success and independent learning. By nurturing learners' beliefs in their own abilities, teachers can promote higher levels of engagement and motivation. The findings in your study also corroborate Pintrich's (2004) research, which revealed that goal-setting and motivational strategies such as task value and control of learning beliefs are vital in supporting learners to take control of their learning process, resulting in better personal development and autonomy.

Table 6. Multiple Linear Regression Analysis Results to Determine Significant Predictors of Learners' Behavior Development.

Predictor		B	Beta	t	p	Interpretation
Motivated Learning Strategies	Intrinsic Goal Motivation	0.086	0.103	2.48	0.014	Significant
	Extrinsic Goal Motivation	0.129	0.157	3.67	<.001	Significant
	Task Value	0.276	0.320	6.98	<.001	Significant
	Control of Learning Beliefs	0.148	0.202	4.87	<.001	Significant
	Self-Efficacy for Learning and Performance	0.210	0.236	5.51	<.001	Significant
	Constant	**0.538**		**4.27**	**<.001**	

Notes: F(5, 334)=121.00, p<.001; R-square=0.645, Adjusted R-square=0.639

Table 6 discloses the summary of the regression analysis. The results revealed that the regression model was statistically significant, F(5, 334)=121.00, p<.001, with 64.50% of variance in learners' personal development behavior (R-square=0.645, Adjusted R-square=0.639). The results of the regression coefficients denoted that the motivated learning strategies of teachers such as intrinsic goal motivation (B=0.086, p=0.014), extrinsic goal motivation (B=0.129, p<.001), task value (B=0.276, p<.001), control of learning beliefs (B=0.148, p<.001, and self-efficacy for learning and performance (B=0.210, p<.001), are significant predictors of the learners' personal development behavior. This indicates that teacher-facilitated motivational strategies significantly contribute to shaping students' personal development.

Specifically, when students perceive learning tasks as valuable (task value), believe in their capability to succeed (self-efficacy), and feel in control of their own learning (control beliefs), they are more likely to engage in behaviors that foster self-growth, responsibility, and resilience. Furthermore, both intrinsic and extrinsic motivational goals appear to influence students' attitudes and actions toward personal development, suggesting that internal drives (e.g., passion, interest) and external incentives (e.g., rewards, recognition) can complement each other in promoting holistic student outcomes.

The findings of this regression analysis are consistent with existing research highlighting the critical role of motivational strategies in shaping learners' personal development behavior. Studies have shown that when students perceive learning tasks as valuable and believe in their own abilities, they are more likely to engage in proactive learning behaviors that contribute to personal growth. Schunk (1991) emphasized that self-efficacy for learning and performance is a powerful predictor of students' academic motivation and persistence, which aligns with the significant contribution of self-efficacy found in your study.

Additionally, Deci and Ryan's (1985) Self-Determination Theory underscores the importance of both intrinsic and extrinsic motivations in promoting autonomous, self-regulated learners. Their research suggests that students who are motivated by both internal passions (intrinsic motivation) and external rewards (extrinsic motivation) are more likely to display positive learning outcomes and personal development. This is reflected in your study, where both intrinsic and extrinsic goal motivation were significant predictors of personal development behavior.

Furthermore, the importance of control beliefs in learning has been well-documented. Pintrich (2004) found that students who believe they have control over their learning process are more likely to adopt adaptive learning strategies and engage in behaviors that foster personal development, such as responsibility and resilience.

The findings also resonate with Zimmerman's (2000) research on self-regulated learning, which highlights that learners who actively set and pursue goals are more likely to exhibit growth in personal and academic domains.

CONCLUSIONS

The findings revealed that key motivational strategies-such as intrinsic and extrinsic goal orientation, task value, control of learning beliefs and self-efficacy-play a significant role in shaping learners' sense of autonomy and their personal growth. Among these, intrinsic motivation and self-efficacy showed the strongest positive impact on both autonomy and development behavior. Furthermore, findings showed meaningful associations between learners' behavior development and certain profile variables such as age and grade level, indicating that personal characteristics may influence how students respond to motivational strategies. This result underscores the importance of integrating motivation-based strategies into teaching practices.

REFERENCES

Bieg, S., Rickelman, R. J., Jones, J. P., & Mittag, W. (2013). The role of teachers' care and self-determined motivation in working with students in Germany and the United States. *International Journal of Educational Research*, *60*, 27–37. https://doi.org/10.1016/j.ijer.2013.04.002

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. Kogan Page.

DO 42, s. 2017 – National Adoption and Implementation of the Philippine Professional Standards for Teachers | Department of Education. (n.d.). https://www.deped.gov.ph/2017/08/11/do-42-s-2017-national-adoption-and-implementation-of-the-philippine-professional-standards-for-teachers/

Matos, L., Reeve, J., Herrera, D., & Claux, M. (2018). Students' Agentic Engagement Predicts Longitudinal Increases in Perceived Autonomy-Supportive Teaching: The Squeaky Wheel Gets the Grease. *The Journal of Experimental Education*, *86*(4), 579–596. https://doi.org/10.1080/00220973.2018.1448746

Nahid, S., Muzaffar, N., & Abbas, M. (2023). Impact of Teachers' Motivation on Students' Performance. *Global Educational Studies Review*, *VIII*(II), 444–453. https://doi.org/10.31703/gesr.2023(VIII-II).40

Pintrich, P. R., & De Groot, E. V. (1990). *Motivational and self-regulated learning components of classroom academic performance*. Journal of Educational Psychology, 82(1), 33-40.

Pintrich, P. R., & McKeachie, W. J. (2000). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. University of Michigan.

Reeve, J. (2011). Teaching in Ways that Support Students' Autonomy. *Empirical Research in Teaching and Learning*, 90–103. https://doi.org/10.1002/9781444395341.ch5

Republic Act No. 9293. (n.d.). Lawphil.net. https://lawphil.net/statutes/repacts/ra2004/ra_9293_2004.html

Ryan, R. M., & Deci, E. L. (2000). Self-determination Theory and the Facilitation of Intrinsic motivation, Social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://selfdeterminationtheory.org/SDT/documents/2000_RyanDeci_SDT.pdf

Shrestha, B.K. (2019). Impact of value education in personal behavior of students.A case study of Nepal. Mewar University, Rajasthan, Indian.

Teacher Professional Development and Student Reading Achievement: A Meta-Analytic Review of the Effects. https://www.researchgate.net

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. https://doi.org/10.1016/s0742-051x(01)00036-1

Wang, C. K. John., Liu, W. C., Kee, Y. H., & Chian, L. K. (2019). Competence, autonomy, and relatedness in the classroom: understanding students' motivational processes using the self-determination theory. *Heliyon*, *5*(7), e01983. https://doi.org/10.1016/j.heliyon.2019.e01983

ENHANCING READING COMPREHENSION THROUGH MOTHER TONGUE-BASED INSTRUCTION IN BAY-ANG ELEMENTARY SCHOOL, UBAY, BOHOL

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ABSTRACT

This action research examined the effectiveness of Mother Tongue-Based Instruction (MTBI) on Grade 2 pupils' reading comprehension at Bay-ang Elementary School, Ubay, Bohol during School Year 2023-2024. Using a quantitative design, the study administered the Oral Reading Verification Test in Cebuano and the Philippine Informal Reading Inventory in English to 51 learners (28 males, 23 females). Descriptive statistics, chi-square tests, Pearson correlation, and paired-sample t-tests were employed to analyze relationships between learners' age, sex, and reading performance in both languages. Results showed that 86.27 % of pupils were Very Good Readers in the mother tongue compared with 23.53 % in English; the mean comprehension score was significantly higher in Cebuano ($M = 35.62$) than in English ($M = 28.62$), $t(25) = 9.82$, $p < .001$. Correlations indicated linked progress between mother tongue and English. Age and sex exhibited no significant association with reading outcomes in either language. The findings affirm that initial literacy is strengthened when instruction builds on learners' first language, echoing recent national surveys and regional studies that link MTB-MLE to gains in functional literacy. Key implementation challenges identified include limited contextualized materials and insufficient teacher preparation. An enhancement plan costed at PHP 160,000 outlines capacity-building, material development, stakeholder engagement, and monitoring to optimize MTBI delivery. The study concludes that sustained investment in teacher training, localized resources, and community support is critical to consolidate MTBI gains and to bridge the transition toward balanced bilingual literacy. Further rigorous research is recommended to explore long-term academic effects and refine pedagogical strategies in multilingual classrooms.

Keywords: reading comprehension, mother tongue-based instruction (MTBI), oral reading verification test (ORVT)

INTRODUCTION

Mother Tongue-Based Instruction (MTBI) refers to teaching students in their first language or mother tongue during the early years of education. Research consistently shows that MTBI improves cognitive skills, literacy, and academic performance by building a strong foundational understanding in a language children are most familiar with. In order to support the objectives of Education for All (EFA) and the "Every Child-A-Reader Program," MTBI has been introduced in Kindergarten, Grades 1, 2, and 3. This is the most recent development in the Philippine educational system brought about by the new K-12 program (DepEd, 2012). When children learn in their mother tongue, they navigate knowledge with confidence and ease. Concepts become clearer, ideas flow freely, and the joy of discovery amplifies. Imagine a tribal child understanding math through their own language, promoting a sense of belonging and active participation. Less common have been teachers who have historically placed a strong focus on raising pupils' reading levels during the elementary school years. Because of this, reading instruction is rarely given to pupils who struggle with reading, which causes the achievement gap to grow between them and their grade level.

Several studies support the use of the mother tongue in early education. Tiangson et al. (2019) found that MTBI leads to more interactive classrooms and better comprehension. A study by Bularon (2025) noted a marked improvement in assessment scores among Grade 2 pupils taught using their mother tongue. Challenges such as lack of teaching materials and inadequate teacher training were also identi-

fied. A UNESCO report (2008) concluded that children instructed in their first language perform better in school and exhibit greater self-confidence. In the Philippine context, the Department of Education and the 2024 Functional Literacy, Education and Mass Media Survey (FLEMMS) reveal that functional literacy has improved from 61.7% in 2019 to 70.8% in 2024, representing about 11 million more functionally literate Filipinos. This improvement is attributed in part to the implementation of Mother Tongue-Based Multilingual Education (MTB-MLE), particularly in early grades. Regional results also reflect this trend, with areas like the Cordillera Administrative Region achieving 81.2% functional literacy. Additionally, a 2023 study in Cebu City found that both teachers and parents view mother tongue instruction as beneficial, while another study showed that around 70% of Grade 3 learners performed at effective or advanced levels in science when taught in their first language. However, it stressed the need for strong support systems, including curriculum development, teacher training, and community involvement.

Children learn better and faster when taught in their mother tongue, preventing delays and increasing motivation and engagement. MTBI fosters critical thinking, problem solving, and creativity. It supports cultural literacy and identity, enhancing students' confidence and social integration. It improves reading comprehension and academic outcomes, as shown in studies where learners demonstrated higher participation and eagerness (Ates, R.A.M., et al, 2023). Compared to teaching a second or foreign language, teaching in the mother tongue improves children's learning in the early grades. Learning a second language is less difficult for a child who is already proficient in reading.

In Bay-ang Elementary School, located in Ubay, Bohol—a Cebuano-speaking region—this policy offers both opportunities and challenges. While students benefit from instruction in their native language, issues such as insufficient instructional materials, teacher training gaps, and mixed language environments pose significant obstacles. This action research seeks to examine the effectiveness of Mother Tongue-Based Instruction (MTBI) in a Grade 2 class of Bay-ang Elementary School. The study focuses on academic performance, classroom participation, and instructional delivery, providing insights and strategies to optimize the MTB-MLE implementation.

STATEMENT OF THE OBJECTIVES

The main purpose of the study was to determine the reading comprehension ability of grade 2 class in Bya-ang Elementary School for the school-year 2023-2024 . Specifically, it sought to answer the following questions:

1. What is the profile of the pupils in terms of: age; and sex.
2. What is the pupils' level of reading comprehension based on ORVT/Phil IRI results in MTB and English?
3. Is there a significant relationship between the pupils' profile and reading comprehension in MTB?
4. Is there a significant relationship between the pupils' profile and the reading comprehension in English?
5. Is there a significant difference between pupils' reading comprehension in MTB and English?
6. Based on the findings, what enhancement plan can be proposed?

RESEARCH METHODOLOGY

In conducting this investigation, the researcher used the quantitative method utilizing the questionnaire summative evaluation passage from the Oral Reading Verification (ORV) test and Phil IRI both English and translated in MTB as the main tool. This focused on assessing the reading comprehension ability of grade 2 class in Bay-ang Elementary School, Ubay, Bohol.

Environment and Respondents. The study was conducted at Bay-ang Elementary School, located in Ubay, Bohol. Specifically, it focused on the Grade 2 class for School Year 2023-2024. The class consisted of a total of 51 pupils, with 28 male and 23 female learners. These participants were selected to represent the typical demographic and learning profile of primary-grade learners in the school. Their involvement provided valuable insights into the academic behaviors and responses relevant to the objectives of the study.

Instruments. The researcher used a modified tool from the Oral Reading Verification Test in MTB and Philippine Informal Reading Inventory (Phil-IRI) in English.

Data Gathering Procedures. Permission to carry out the study was secured first from the Public Schools District Supervisor. Upon the endorsement of the research design, the researcher asked permission from the School Head of Bay-ang Elementary School in Ubay, Bohol. After the approval to conduct the study, the researchers then conducted the ORVT in MTB and Phil IRI in English to the grade 2 pupils. Furthermore, the researcher assured the respondents regarding the confidentiality of their responses and sincerely sought their utmost cooperation in reading the provided passages. After a week, the result was finalized for tabulation, treatment, analysis, and interpretation purposes.

Statistical Treatment. The data were subjected to statistical treatment using simple percentage frequency and weighted mean to analyze the gathered data. Simple Percentage was used in the study using the formula:

$p = \frac{f}{n} \times 100$ Where: P = percentage
f = responses
n = number of percentage

Weighted Mean Score (WMS) was also used to determine the level of reading comprehension in MTB and English. The formula is:

$\text{WMS} = \frac{\Sigma fw}{\Sigma n}$ Where: $\text{WMS} =$ Weighted Mean Score; $\Sigma fw =$ Sum of the products of f and w where f is the frequency of each weight; w is the weight and n = Number of respondents

The Pearson Product Moment Correlation and t-test for correlation coefficient was also used to determine the relationship between the responses of the respondents in regards to the statements of null hypotheses. This formula below will be used:

Formula for the correlation coefficient: $r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n(\Sigma x^2) - (\Sigma x^2)][n(\Sigma y^2) - (\Sigma y^2)}}$

Formula for the t test for the correlation coefficient: $t = r\sqrt{\frac{n-2}{1-r^2}}$

Chi-Square. To determine the significant degree of relationship between the different variables, the data were subjected to Chi-Square test using the formula: $X^2 = \sum \frac{(O-E)^2}{E}$

X^2=correlation coefficient; f_o=observed frequency; f_e =expected frequency

The obtained Chi-square ratio was checked against the table of Significant values at 0.05 level of significance.

FINDINGS

1. Profile of the Pupils:

Table 1
N=51

Items	Frequency (F)	Percentage (%)	Rank
Age			
7 years old	46	90.20	1
8 years old	5	9.80	2
Total	51	100.00	
Sex			
Male	28	54.90	1
Female	23	45.10	2
Total	51	100.00	

Age. It shows that 7 years old got the highest frequency with forty-six (46 or 90.20%) of the 51 pupil -respondents while the age 8 years old got the lowest frequency with five (5 or 9.80%). The average mean age is 7.10 which is appropriate for the grade level. This indicates that most of the pupils are at an age appropriate for their grade level, which supports effective learning since they are likely to be at similar developmental stages. The minimal number of older pupils may suggest delayed school entry, grade repetition, or transfer from different educational backgrounds. A relatively uniform age group can aid teachers in implementing age-appropriate instruction and classroom management strategies.

Sex. Twenty-eight (28 or 54.90%) were male and twenty-three (23 or 45.10%) were male. This suggests there is no significant gender disparity in enrollment at this grade level. Such balance supports the application of gender-responsive teaching approaches that cater equally to both boys and girls. It also provides opportunities for promoting inclusive activities and observing any sex-related differences in learning styles or participation that could inform more effective instructional practices.

2. Pupils' level of reading comprehension:

Table 2
N=51

Description	MTB			English		
	F	%	Rank	F	%	Rank
Excellent Reader (E) 41 - 50	3	5.88	3	8	15.69	4
Very Good Reader (VS) 31 - 40	44	86.27	1	12	23.53	3
Good Reader (S) 21 – 30	4	7.85	2	13	25.49	2
Fair Reader (F) 11 - 20	0	0	5	18	35.29	1
Poor Reader (P) 1 - 10	0	0	5	0	0	5.5
Non Reader (N) 0	0	0	5	0	0	5.5
Total	51	100.00		51		

In MTB, Very Good Reader got the highest frequency with 86.27% while Fair Reader, Poor Reader, and Non-reader got the lowest frequency of zero (0 or 0%). This implies that the pupils generally possess strong foundational reading skills in their first language, which is essential for literacy development and comprehension across subjects. The absence of pupils in the lower reading categories suggests effective early reading instruction and language support at home or in school. This positive outcome can serve as a strong foundation for further academic learning and the development of higher-order thinking skills in later grades.

In English, Fair Reader got the highest frequency of 35.29% while Poor Reader and Non-reader got the lowest frequency of zero (0 or 0%). The mean percentage shows that there were 86.27 Very Good Reader in MTB while 23.53 in English, which means that there were more readers in MTB than that in English. This suggests that pupils are generally more proficient in reading in their first language than in English, which is expected in early education where the mother tongue serves as the foundation for literacy. The implication is that while reading skills are developing, there is a need for continued and enhanced support in English language instruction to bridge the gap and ensure pupils achieve balanced literacy in both languages.

Recent studies strongly support the finding that learners perform significantly better in reading when taught in their mother tongue compared to English. For instance, Lagata (2022) evaluated an 8-week learning recovery program in the Philippines and found that learners showed dramatic improvements in reading competencies in Mother Tongue-Based instruction (MTB), with effect sizes exceeding 3.7, while gains in English were comparatively modest.

Similarly, Germino (2023) observed that Grade 3 pupils in Eastern Samar achieved high mastery in segmental phonics through MTB, indicating that early literacy skills are better developed in a familiar language. In another study, Mamalampac (2024) explored the relationship between MTB proficiency and English literacy in Marawi City and found a positive correlation, affirming Cummins' interdependence

hypothesis—that strong foundational skills in the first language positively transfer to second-language learning.

De Lemios (2023) also found that Grade 5 learners wrote more effectively in Tagalog than in English, further reinforcing the advantage of L1 instruction in literacy development. Additionally, Tabudlong (2023) demonstrated that integrating digital phonics materials in MTB instruction significantly enhanced learners' word recognition and reading fluency. Collectively, these findings confirm that learners are more likely to become "Very Good Readers" in MTB than in English, aligning with the result of 86.27% strong readers in MTB versus 23.53% in English. These studies not only validate the effectiveness of MTB-MLE but also emphasize its critical role in building foundational literacy and supporting long-term academic success.

3. Significant relationship between the pupils' profile and reading comprehension in MTB.

Table 3-A
Relationship Between Age and Summative Evaluation Result in MTB
N = 51

Result / Age	E	VG	G	F	P	N	Total
8	2.0769 0 2.0769	4.5000 5 0.0556	2.4231 4 1.0262	0.000 0 0.0000	0.0000 0 0.0000	0.0000 0 0.0000	9
9	3.6923 5 0.4631	8.0000 8 0.0000	4.3077 3 0.3970	0.000 0 0.0000	0.0000 0 0.0000	0.0000 0 0.0000	16
10	0.2308 1 2.5636	0.5000 0 0.5000	0.2692 0 0.2692	0.000 0 0.0000	0.0000 0 0.0000	0.0000 0 0.0000	1
Total	6	13	7	0	0	0	26

Chi-square = **7.3516**
Critical Value of Chi-square at 4 df and 0.05 level of significance = **9.49**
Result: **Insignificant**
Decision: **Accept Ho**

Table 3-A shows the relationship between the pupils' age and summative evaluation result in MTB. The chi-square computed value is 7.3516 at 4 degree of freedom at 0.05 level of significance is less than the critical value of 9.49. It reveals an insignificant result. It means that age is not a factor on students' summative evaluation result in MTB.

A study by Ei Phyo Khaing (2023) on reading readiness among kindergarten students in Myanmar revealed no statistically significant relationship between age and reading readiness, indicating that age alone was not a determining factor in reading performance. Similarly, a study titled Factors Influencing the Reading Skills found no significant correlation between the age of Grade 6 pupils and their reading profiles, reporting a chi-square value of 0.22 and a p-value of 0.896. These results align with the findings in Table 3-A of the present study, where the computed chi-square value of 7.3516 at 4 degrees of freedom was lower than the critical value of 9.49 at the 0.05 level of significance, leading to the conclusion that the relationship between age and summative evaluation results in MTB is statistically insignificant. This suggests that age is not a key factor in determining students' performance in MTB assessments.

Table 3-B
Relationship Between Sex and Summative Evaluation Result in MTB

Result / Age	E	VG	G	F	P	N	Total
Male	3.0000 3 0.0000	6.5000 4 0.9615	3.5000 6 1.7857	0.0000 0 0.0000	0.0000 0 0.0000	0.0000 0 0.0000	13
Female	3.0000 3 0.0000	6.5000 9 0.9615	3.5000 1 1.7857	0.0000 0 0.0000	0.0000 0 0.0000	0.0000 0 0.0000	13
Total	6	13	7	0	0	0	26

Chi-square = **5.4944**
Critical Value of Chi-square at 2 df and 0.05 level of significance = **5.99**
Result: **Insignificant**
Decision: **Accept Ho**

Table 3-B shows the relationship between the pupils' sex and summative evaluation result in MTB. The chi-square computed value is 5.4944 at 2 degree of freedom at 0.05 level of significance is less than the critical value of 5.99. It reveals an insignificant result. It means that sex is not a factor on students' summative evaluation result in MTB.

This is true to the study of Rahmawati and Ummah (2020) examined the reading comprehension performance of male and female college students in Indonesia and found no significant difference between the two groups, indicating that sex is not a determining factor in reading achievement. Similarly, a study conducted in Kiambu County, Kenya, investigated gender differences in reading comprehension among secondary school students with varying cognitive learning styles. The results revealed no statistically significant difference in reading performance between male and female students, regardless of whether they were field-dependent or field-independent learners.

The descriptive data suggest trends—such as stronger reading skills in MTB compared to English, meaning the null hypothesis is accepted, there is no significant relationship between the profile of the pupil respondents and the level of reading comprehension in MTB and English.

4. Significant Relationship between the pupils' profile and the reading comprehension in English.

Table 4-A
Relationship Between Age and Summative Evaluation Result in English
N = 51

Result / Age	E	VG	G	F	P	N	Total
8	1.3846 0 1.3846	2.0769 3 0.4103	2.4231 2 0.0739	3.1154 4 0.2512	0.0000 0 0.0000	0.0000 0 0.000	9
9	2.4615 4 0.9616	3.6923 2 0.7756	4.3077 5 0.1113	5.5385 5 0.0524	0.0000 0 0.0000	0.0000 0 0.000	16
10	0.1538 0 0.1538	0.2308 1 2.5636	0.2692 0 0.2692	0.3462 0 0.3462	0.0000 0 0.0000	0.0000 0 0.000	1
Total	4	6	7	9	0	0	26

Chi-square = **7.3537**
Critical Value of Chi-square at 6 df and 0.05 level of significance = **12.59**
Result: **Insignificant**
Decision: **Accept Ho**

Table 4-A revealed the relationship between the pupils' age and summative evaluation result in English.

The chi-square computed value is 7.3537 at 6 degree of freedom at 0.05 level of significance is less than the critical value of 12.59. It reveals an insignificant result. It means that age is not a factor on pupils' summative evaluation result in English.

A recent study by Dixon (2020) supports the finding that age is not a significant factor in pupils' performance in English reading comprehension. In her research on primary school children in England who were learning English as an additional language, Dixon applied mixed-effects modeling to determine predictors of reading comprehension. The results showed that the inclusion of age as a variable did not significantly improve the model, with a chi-square value of 0.32 ($p = .854$), indicating no meaningful relationship between age and reading comprehension outcomes. This analysis confirms that age is not a significant factor in pupils' summative evaluation results in English.

Table 4-B
Relationship Between Sex and Summative Evaluation Result in English
N = 51

Result / Age	E	VG	G	F	P	N	Total
Male	2.0000 1 0.5000	3.0000 3 0.0000	3.5000 2 0.6429	4.5000 7 1.3889	0.0000 0 0.0000	0.0000 0 0.0000	13
Female	2.0000 3 0.5000	3.0000 3 0.0000	3.5000 5 0.6429	4.5000 2 1.3889	0.0000 0 0.0000	0.0000 0 0.0000	13
Total	4	6	7	9	0	0	26

Chi-square = **5.0636**
Critical Value of Chi-square at 3 df and 0.05 level of significance = **7.82**
Result: **Insignificant**
Decision: **Accept Ho**

Table 4-B shows the relationship between the students' sex and summative evaluation result in English. The chi-square computed value is 5.0636 at 3 degree of freedom at 0.05 level of significance is less than the critical value of 7.82. It reveals an insignificant result. It means that sex is not a factor on students' summative evaluation result in MTB.

Mabborang and Balero (2023) conducted a quasi-experimental study examining various factors affecting reading comprehension among senior high school students. While academic track and learning modality were found to significantly influence reading outcomes, the study reported that gender differences were statistically insignificant. Similarly,

AlSereidi (2021) investigated reading skills among 11th-grade public school students in the United Arab Emirates. Although female students scored slightly higher in various aspects of reading—such as literal, inferential, critical, and appreciative comprehension—the differences were not statistically significant.

These findings are consistent with the results presented in Table 4-B of the current study, where the chi-square computed value of 5.0636 at 3 degrees of freedom was less than the critical value of 7.82 at the 0.05 level of significance. This indicates that sex is not a determining factor in students' summative evaluation results in English, reinforcing the broader conclusion that reading performance is shaped more by academic context and instructional strategies than by gender.

5. Significant difference between pupils' reading comprehension in MTB and English.

Table 5
Difference of Pupils' Reading Comprehension Between MTB and English
N = 51

t-Test: Paired Two Sample for Means

	Mother Tongue	***English***
Mean	35.62	28.62
Variance	58.33	97.93
Observations	26	26
Pearson Correlation	0.9464	
Hypothesized Mean Difference	0	
df	25	
t Stat	**9.8242**	
P(T<=t) one-tail	2.29E-10	
t Critical one-tail	1.7081	
P(T<=t) two-tail	4.58E-10	
t Critical two-tail	**2.0595**	

Result: **Significant**
Decision: **Reject Ho**

From the data, we can observe that pupils performed better in MTB than in English reading comprehension.

The higher frequency of Very Good Readers and the higher mean score in MTB suggest a noticeable difference in reading proficiency between the two languages. This supports the idea that pupils comprehend better in their first language (MTB), especially in the early years of education. The difference may be due to greater familiarity, exposure, and cognitive ease in understanding the mother tongue. Meaning, the null hypothesis is rejected, there is a significant difference between pupils' reading comprehension in MTB and English.

Rafanan's 2024 research in the Sta. Grade 3 students in the Catalina District were judged to be "Approaching Proficiency" in English but "Proficient" in MTB-MLE reading comprehension. Additionally, the study found a substantial correlation between reading comprehension abilities and student-related characteristics, such as age. This implies that students' reading comprehension abilities, especially in their mother tongue, tend to get better as they get older. Age alone does not ensure second language success, either, as the shift to English reading comprehension may need for more assistance.

Although there aren't many research specifically examining how sex affects reading comprehension in MTB-MLE and English, Rafanan's 2024 study found no appreciable variations in reading comprehension abilities between male and female students. This implies that reading comprehension skills in any language may not be influenced by a person's sex. It's crucial to remember, too, that other research has emphasized the part socioeconomic factors—like parental education and access to educational resources—play in reading comprehension. These factors can also have an indirect impact and may interact with gender-related dynamics.

These results suggest that although age can have a favorable impact on mother tongue reading comprehension, more assistance could be required to reach comparable English proficiency. Reading comprehension abilities do not seem to be much impacted directly by sex. However, additional elements like socioeconomic position and access to educational resources must be considered for a thorough understanding. It is advised that more research be done to fully examine these connections.

Enhancement Area	Activities	Timeline	Budget Estimate (PHP)	Responsible Person(s)/ Group
1. Teacher Capacity Building	- Conduct quarterly training workshops	Q1, Q2, Q3, Q4 (Year 1)	40,000 (venue, materials, trainer fees)	School Admin, MTBI Coordinator
	- Establish mentorship and peer collaboration	Ongoing throughout Year 1	10,000 (meetings, coordination)	Senior Teachers, MTBI Coordinator
	- Classroom observations and feedback	Bi-monthly throughout Year 1	5,000 (assessment tools, time allowance)	School Principal, Supervisors
2. Instructional Materials	- Develop localized reading resources	Q1 - Q3 (Year 1)	30,000 (printing, content creation)	Teachers, Language Experts
	- Provide materials in print and digital formats	Q3 - Q4 (Year 1)	15,000 (printing, digital tools)	School Admin, IT Support
	- Establish resource library/repository	Q4 (Year 1)	10,000 (setup, materials management)	School Admin, Librarian
3. Pupils' Engagement & Learning Environment	- Set up reading corners and mother tongue libraries	Q2 (Year 1)	20,000 (books, furnishings)	Teachers, PTA
	- Conduct parental/ community workshops	Twice a year (Q2, Q4)	10,000 (materials, venue)	School Admin, Community Liaison
	- Organize interactive reading activities	Monthly throughout Year 1	5,000 (materials, facilitation)	Teachers
4. Monitoring and Evaluation	- Conduct reading assessments	Quarterly throughout Year 1	10,000 (assessment tools, data analysis)	Teachers, School Admin
	- Collect and analyze feedback from stakeholders	Semi-annually (Q2, Q4)	5,000 (surveys, meetings)	MTBI Coordinator
5. Policy and Administrative Support	- Advocate for funding and policy support	Ongoing	Minimal (time, communication)	School Principal, School Board
	- Integrate MTBI goals in school improvement plans	Q1 (Year 1)	Minimal	School Admin

Total Estimated Budget for Year 1: PHP 160,000

CONCLUSIONS

The study's findings, reading comprehension among second-graders at Bay-ang Elementary School is much improved by mother tongue-based instruction. The results show that when education is given in their first language, students are more capable of decoding, comprehending, and interacting with reading content. This method creates a more relatable and meaningful learning environment, which makes it easier and more confident for students to develop the fundamentals of literacy.

However, while the benefits are clearly evident, the implementation of Mother Tongue-Based Instruction is not without its challenges. One of the primary concerns is the need for comprehensive and continuous teacher training. Many educators may not be adequately prepared to deliver instruction in the mother tongue, particularly if they were trained in English or Filipino. Effective implementation requires that teachers not only be fluent in the local language but also be skilled in pedagogical strategies that are sensitive to the linguistic and cultural context of the learners.

Another significant challenge lies in the availability of contextualized instructional materials. There is often a scarcity of quality teaching and learning resources that are written in the local language and aligned with the curriculum. Without access to such materials, teachers may struggle to deliver lessons that are both engaging and educationally sound.

In light of these challenges, the study underscores the importance of investing in teacher professional development programs that focus on mother tongue pedagogy, as well as the development and distribution of localized learning materials. With sustained support and resources, Mother Tongue-Based Instruction can continue to play a crucial role in improving literacy outcomes and promoting inclusive, culturally responsive education.

RECOMMENDATIONS

For Pupils: Maximize the Use of Mother Tongue in Learning; Pupils are encouraged to actively use their mother tongue not only in the classroom but also at home and in everyday interactions. This will strengthen their foundational literacy and comprehension skills. Read Regularly in the Mother Tongue; Engage in consistent reading of age-appropriate and culturally relevant materials in the mother tongue to improve vocabulary, fluency, and comprehension. Participate Actively in Class; Pupils should take part in discussions and activities, using the mother tongue confidently to express ideas and understanding.

For Teachers: Undergo Continuous Professional Development; Teachers participate in regular training and workshops focused on Mother Tongue-Based Multilingual Education (MTB-MLE), with emphasis on reading instruction strategies and contextualization of content. Develop and Utilize Contextualized Materials; Create or adapt instructional materials that reflect the local culture, language, and experiences of learners to make lessons more engaging and meaningful. Use Differentiated Instruction; Recognize learners' varying levels of language proficiency and adjust teaching methods to meet their individual needs, ensuring inclusive and effective learning.

For School Administrators: Support Teacher Training Programs: Allocate resources and time for continuous teacher development in MTB-MLE pedagogy and instructional material development. Ensure Availability of Learning Materials: Invest in the creation, reproduction, and dissemination of localized reading and instructional resources in the mother tongue. Monitor and Evaluate MTB Implementation: Regularly assess the effectiveness of mother tongue instruction through classroom observations, learner performance, and feedback mechanisms, making improvements as needed.

For Researchers: Conduct Further Studies on MTB-MLE: Explore other aspects of mother tongue instruction, such as its long-term effects on academic achievement, emotional development, and multilingual transition. Investigate Effective Teaching Strategies: Research innovative and evidence-based methods that enhance reading comprehension using the mother tongue, especially in multilingual or resource-limited contexts. Examine Implementation Challenges: Study the barriers to effective MTB-MLE implementation in different regions or settings and propose viable solutions that can inform policy and practice.

REFERENCES

AlSereidi, A. S. M. (2021). Gender differences in reading skills in English: A case study of 11th grade publicschool students in UAE. *Technium Social Sciences Journal, 24*(1), 131–142.Bularon, E. D. (2025). Mother Tongue-Based Instruction: Effects on Learners' Performance. *Sprin Journal of Arts, Humanities and Social Sciences*, 4(2), 47-54.

Department of Education. (2012). *Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013 (Republic Act No. 10533)*. DepEd.

Department of Education. (2024). Functional Literacy, Education and Mass Media Survey (FLEMMS):

Summary report. *Philippine Statistics Authority*.

De Lemios, M. L. D. (2023). Writing performance of Grade 5 learners in Tagalog and English. *Journal of Community Development Research (Humanities and Social Sciences), 16(3), 115–133.*

Dixon, J. (2020). Language and reading development in children learning English as an additional language in primary school in England. *Journal of Research in Reading*. Advance online publication.
Flores, H. D., & Perez, D. R. (2023). Examining the effectiveness of the Mother Tongue-Based Instruction in teaching science at the primary level. *ResearchGate*.
Germino, E. M. (2023). The reading performance of learners in Mother Tongue in the countryside area of the Philippines. *International Journal of Advanced Research*, 11(6), 1597–1604.
Khaing, E. P. (2023). *Reading readiness of kindergarten pupils in selected schools in Myanmar*. ResearchGate.
Lagata, L. M. (2022). Evaluation of the effects of the 8-week learning recovery program on pupils' reading competencies in Mother Tongue, Filipino, and English. *International Journal of Research and Innovation in Social Science (IJRISS), 6(9), 633–638.*
Mabborang, R. C., & Balero, M. S. (2023). Exploring factors affecting reading comprehension skills: A quasi-experimental study on academic track strands, learning modalities, and gender. *American Journal of Educational Research, 11*(9), 545–554.
Mamalampac, R. B. (2024). Mother tongue as a correlate of English literacy among Grade 3 pupils in Marawi City. *International Journal of Arts and Social Science,* 7(3), 75–85.
Manatad, C. J., & Adalim, B. P. (2023, December). Mother Tongue-Based Instruction: An assessment of its implementation in kindergarten education in Cebu City. Researchgate.net.
Rafanan, J. A., & Raymundo, J. L. (2024). Impact of customized reading remediation and intervention in reading fluency of high school students. *International Journal of Linguistics, Literature and Translation, 7*(7).
Rahmawati, F., & Ummah, A. (2020). The reading comprehension achievements of male and female students at the third semester of TBI STAIN Pamekasan. *PANYONARA: Journal of English Education*, *2*(2), 115–128.
Tabudlong, N. (2023). Innovation in early reading instruction: The development of e-learning materials in Mother Tongue. *ResearchGate.*
Tiangson, S. D., Paragas, J. S., Queriones, E. C., & Santos, R. F. (2019). Mother Tongue-Based Instruction on Teachers' Instructional Delivery: An Assessment. *Southeast Asian Journal of Science and Technology*, 4(1).
UNESCO. (2008). *Improving the Quality of Mother Tongue-Based Education in Multilingual Contexts*. UNESCO.
Wanjiru, M. N., Mwaura, P. A., & Mbugua, Z. K. (2021). Gender differences in field-dependent and field- independent cognitive learning styles toward reading comprehension among secondary school students in Kiambu County, Kenya. *International Journal of Research and Innovation in Social Science (IJRISS)*.

RESEARCH EFFICACY OF SOCIAL SCIENCE STUDENTS

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ABSTRACT

This descriptive-quantitative research examined the level of research efficacy of undergraduate and graduate students enrolled in social science related programs at Isabela State University (ISU) - Echague Campus. The study surveyed 56 students purposively selected from BSEd Social Science, BS Psychology, MAEd Social Science, and MA Psychology programs. A structured survey questionnaire and an adapted 5-point Likert scale was utilized to measure students' profile and level of research efficacy across six components: planning, literature review and problem formulation, conceptual/theoretical framework, discussion, data analysis, and research ethics. Results revealed that students reported a consistently high level of research efficacy in the six components, with the highest scores in Research Ethics and Discussion, and the lowest in Conceptual/Theoretical Framework. Moreover, significant gender-based differences were identified, with female students reporting more effectual than male students, though the effect size was small. In addition, no significant differences were found based on academic level or specific course program, suggesting uniformity in research training across the institution. These findings highlight the value of targeted interventions, such as conceptual framework workshops and gender-sensitive mentoring programs, to support areas of relative weakness and promote equitable research efficacy. Intervention program to increase research efficacy level is also highlighted in the study.

Keywords: Research self-efficacy, social science students, research competence

INTRODUCTION

In the realm of higher education, cultivating research competencies in undergraduate and graduate students has become crucial for academic achievement and future professional efficacy. For social science students, research serves as both an academic responsibility and a salient tool for comprehending, analyzing, and solving social issues. However, despite of the academic initiatives to integrate research for social science programs in higher education institutions, concerns over students' research self-efficacy beliefs is still persistent. Research efficacy, as defined by Bieschke et al., is the students' self-belief and confidence in their capacity to effectively undertake research-related tasks.

Social Cognition Theory emphasizes that self-efficacy beliefs impact a persons' motivation, learning, and performance (Bandura, In an educational setting, students who believe they are competent enough to conduct research are more likely to participate in research with assurance, tenacity, and curiosity (Lambie & Vaccaro. On the other hand, students who are less efficacious in conducting research are more likely to experience anxiety, procrastination, and avoidance, therefore impeding the effective processes of research projects (Onwuegbuzie, 2000). This is particularly alarming especially to social science students since they are expected to not only acquire knowledge but also generate rigorous and socially pertinent research outputs that potentially addresses social issues.

Research efficacy, according to several studies, is influenced by various factors such as academic preparation, exposure to research, mentoring, attitudes, and resilience (Haider, & Dasti, 2022; Cassidy, 2015; Peng et al., 2023; Forester et al., 2004; Bishop & Bieschke, 1998). Additionally, demographic and

academic profile variables such as year level, grade point average, and socio-economic background have been shown to link with research self-efficacy (Tan et al., 2023; Tiyuri et al., 2018; Seyedi-Andi et al., 2019; Phillips & Russell, 1994; Kahn & Scott, 1997). These findings highlight the need of considering contextual elements or factors affecting research efficacy of social sciences students, who regularly interact with complex, qualitative, and transdisciplinary research frameworks.

In the context of Philippine higher education, research has emerged as an institutional priority, notably in response to directives from the Commission on Higher Education (CHED) to foster a culture of research and innovation (CHED Memorandum Order No. 20, s. 2013). The Isabela State University (ISU) specifically the Echague campus is as a tertiary education institution that offers social sciences programs such as but not limited to Bachelor of Secondary Education (BSEd) major in Social Science, Bachelor of Science in Psychology (BSPsy), Master of Arts in Education (MAEd) major in Social Science, and Master of Science (MS) in Psychology. As the university envisions to be a leading research university in the ASEAN region, it requires all its undergraduate and graduate students to undergo research activities. However, there is an increasing necessity to evaluate the research effectiveness of students to guide instructional methods and institutional strategies. Furthermore, there is a limited empirical investigation that thoroughly assessed the research efficacy of social science students at ISU Echague campus, resulting in a significant deficiency in localized comprehension and program advancement.

This is the reason why this study was conceived. The study seeks to find out the level of research efficacy among social science students, investigate the presence of significant differences in research efficacy based on students' demographic variables (including sex, academic level, and programs enrolled in); and recommend a targeted intervention to improve students' research efficacy. The study seeks to elucidate the levels and determinants of research efficacy to guide evidence-based initiatives for curriculum creation, faculty mentoring, and institutional support systems.

METHODOLOGY

Research Design

This study utilized a descriptive-quantitative research design to evaluate the level of research efficacy among social science students and to ascertain if significant differences are present based on their profile variables. The descriptive approach was appropriate for obtaining an accurate account of the current state of research efficacy without manipulating any variables, while the quantitative nature of the research allowed the use of statistical tools to analyze numerical data derived from participants' responses. The design enabled the researcher to describe patterns, compare groups, and identify potential areas for intervention based on measurable outcomes.

Respondents of the Study

The respondents of the study were 56 students from various social science related programs at the Isabela State University (ISU) – Echague Campus. They were chosen through purposive sampling in which 12 students are from the Bachelor of Secondary Education (BSEd) major in Social Science, 14 students from the Bachelor of Science in Psychology (BS Psych), 17 students from the Master of Arts in Education (MAEd) major in Social Science, and 13 students from the Master of Science in Psychology (MS Psych). The use of purposive sampling was guided by the criterion that respondents must be currently enrolled to a social science related program at Isabela State University Echague campus during the second semester of school year 2024 – 2025, and have had exposure to or experience in research, either through coursework or academic requirements.

Data Gathering Instrument

The researcher crafted a structured survey questionnaire which was validated by experts for content and clarity. The survey questionnaire includes a section on demographic profile variables such as gender, course program, and academic level. A Likert scale, the core of the questionnaire, was adapted from the Comprehensive Research Self-Efficacy Scale (C-RSES) developed by Tas, Demiral-Uzan, & Uzan (2023). The C-RSES consists of 29 items that measure a wide range of competencies and confidence levels associated with 6 research components, namely: research planning, literature review and research problem, conceptual or theoretical framework, discussion, data analysis, and research ethics. The adopt-

ed scale underwent both Exploratory and Confirmatory Factor analyses and it has high reliability index and strong internal consistency with a Cronbach's alpha score of 0.91. Each item will be rated on a 5-point Likert scale in which 5 means strongly agree, 4 agree, 3 neither agree nor disagree, 2 disagree, and 1 strongly disagree.

Data Gathering Procedures

Data gathering procedure started with a formal approval from the deans of College of Arts and Sciences (CAS) and College of Education (CEd). Following the approval was a preliminary orientation with the targeted respondents. The respondents signed the Participant Information and Consent Form (PICF) which outlines the objectives of the study, ethical issues, voluntary participation, and guarantee of anonymity before the survey was administered. The researcher personally distributed the survey questions after ethical procedures were approved. Once completed, responses were gathered, managed, and tabulated using the Microsoft Excel. Then the tabulated data underwent statistical analyses using Statistical Packages for Social Sciences (SPSS) Version 24.

Data Analysis Tools Used

To give light to the research objectives, the data collected were analyzed using both descriptive and inferential statistical tools. Frequency count, rank, percent, average, and standard deviation were used to gauge the demographic profiles and levels of research efficacy of the respondents. Prior to the conduct of testing, data normality such as Kolmogorov-Smirnov test was used, and it was found out that the data at hand are normality distributed. Hence, parametric tests are just appropriate to use for the hypothesis testing. Independent Samples t-test was used to determine the difference on research efficacy of the respondents based on their sex, and one-way Analysis of Variance (ANOVA) was employed based on their course programs enrolled in and their academic level.

Furthermore, the table below was used to categorize the level of research efficacy of the students based on their average responses on the C-RSES scale.

Level of Research Self-Efficacy

Range	***Level***
4.20 – 5.00	Very High
3.40 – 4.19	High
2.60 – 3.39	Moderately High/Low
1.80 – 2.59	Low
1.00 – 1.79	Very Low

RESULTS & DISCUSSION

A. Demographic Profile

Table 1. Respondents' Demographic Profile

Sex	*Frequency*	*Percent*
Male	17	30.4
Female	39	69.6
Program Level	*Frequency*	*Percent*
Undergraduate	26	46.4
Graduate	30	53.6
Course Program	*Frequency*	*Percent*
BSE Social Science	12	21.43
BS Psychology	14	25.00
MAEd Social Science	17	30.36
MA Psychology	13	23.21
TOTAL	***56***	***100***

The table above shows the demographic profile of the respondents. Out of the 56 participants, majority of them (69.6%) were female, while only 30.4% were male. This breakdown is consistent with trends in psychology and education programs, where female admissions outnumbered the male group (Huang,

2013; National Center for Education Statistics, 2022). In terms of educational level, thirty (30) or 53.6% were graduate students, while twenty (26) or 46.4% were undergraduate students. When grouped according to academic programs, the Master of Arts in Education (MAEd) major in Social Science had the highest representation at 30.36%, followed by Bachelor of Science (BS) in Psychology (25.00%), Master of Arts (MA) in Psychology (23.21%), and Bachelor of Secondary Education (BSE) major in Social Science (21.43%).

B. Research Self-Efficacy Level

Table 2. Respondents' Level of Research Efficacy

Research Component	*Mean*	*SD*	*Level*	*Rank*
Research Planning	3.67	0.71	High	5
Literature Review & Research Problem	3.74	0.67	High	4
Conceptual/Theoretical Framework	3.60	0.86	High	6
Discussion	3.85	0.82	High	1.5
Data Analysis	3.79	0.93	High	3
Research Ethics	3.85	0.89	High	1.5
Research Efficacy	**3.75**	**0.73**	**High**	**-**

The table above shows the Research Efficacy Level of the social science students. Findings indicate that they perceive themselves as having a high level of research efficacy across various research components. The highest mean scores were observed in Research Ethics (M = 3.85, SD = 0.89), and Discussion (M = 3.85, SD = 0.82). This implies that social science students feel confident in upholding ethical standards and articulating their research findings. This aligns with previous research emphasizing the importance of ethical considerations and effective communication in scholarly work (Bandura, 1997). According to National Institute of Environmental Health Sciences, research ethics are fundamental to the integrity and credibility of scholarly work. Adherence to it is crucial across all stages of the research process

Students also reported strong self-efficacy in Data Analysis (M = 3.79) and Literature Review & Research Problem Formulation (M = 3.74). These areas are critical in the research process, and high self-efficacy here suggests that students are well-prepared to engage in the technical and foundational aspects of research. This is consistent with findings from previous studies highlighting the role of self-efficacy in students' ability to perform complex tasks and persist in the face of challenges (Pajares, 2003).

Interestingly, the Conceptual/Theoretical Framework component received the lowest mean score (M = 3.60), though it still falls within the "High" level. This may indicate that students find abstract theoretical constructs more challenging, which is a common issue in research education. Developing a strong conceptual framework requires higher-order thinking skills and a deep understanding of theoretical underpinnings, which can be difficult for students to master without adequate support (Zimmerman & Cleary, 2006).

The overall efficacy score (M = 3.75, SD = 0.73) indicates that students view themselves as capable in their investigative abilities, although there remains potential for improvement. Therefore, focused initiatives, like workshops on developing theoretical frameworks and mentorship programs, could significantly boost students' confidence in their research abilities. These interventions have demonstrated a beneficial effect on students' confidence and performance in research activities (Schunk & Pajares, 2002).

Elevated levels of confidence in research abilities are crucial for fostering students' motivation, persistence, and performance in academic pursuits. Bandura's (1997) foundational work on self-efficacy highlights that individuals who have confidence in their abilities are more inclined to persist in the face of challenges and reach their objectives. In the realm of inquiry, this indicates that students possessing greater confidence in their research abilities are more likely to undertake intricate tasks such as problem formulation, data analysis, and discussion writing.

The connection between self-efficacy in research and both academic performance and research productivity has been established. Kahn and Scott (1997) discovered that self-efficacy in research and interest were significant predictors of graduate students' research output, highlighting its importance in promoting sustained engagement in research activities. In a similar vein, Forester et al. (2004) illustrated

that students who view their research skills more favorably tend to achieve higher scores in research-focused courses and engage more actively in scholarly publications.

Furthermore, those who possess a strong belief in their research abilities demonstrate increased resilience when faced with academic challenges. Madu-Koma and Adekunle (2022) found that doctoral students who possessed high levels of research self-efficacy exhibited greater confidence in overcoming challenges and successfully finishing their dissertations. Way et al. (2021) observed that academic scientists exhibiting elevated self-efficacy levels not only produced a greater volume of publications but also demonstrated a more enduring dedication to their research endeavors over the course of their careers.

The gathered evidence indicates that enhancing research self-efficacy ought to be a key focus in both undergraduate and graduate education. It is essential for institutions to offer sufficient training, mentorship, and hands-on learning opportunities to empower students in developing their research skills and confidence (Bandura, 1997; Forester et al., 2004; Madu-Koma & Adekunle, 2022).

C. Tests of Differences on Research Efficacy Level and Demographic Profile

Table 3. Level of Research Efficacy when grouped according to Sex & Program Level

Sex	*N*	*Mean*	*SD*	*t (54)*	*Sig.*	*Effect Size*
Male	17	3.45	0.56	-2.102*	0.040	0.076
Female	39	3.89	0.76			
Acad. Level	*N*	*Mean*	*SD*	*t (54)*	*Sig.*	*Effect Size*
Undergraduate	26	3.61	0.83	-1.345	0.184	---
Graduate	30	3.87	0.60			

Independent samples t-test was conducted to compare the level of research efficacy of respondents when grouped according to their sex and level. It was observed that there is a statistically significant difference on the research efficacy level between male and female participants (Male = 3.351, Female = 3.881, $p < 0.05$). This implies that female group are more research efficacious than the male group. However, the effect size is small (0.076), which indicates that though the difference exists, it is not overpoweringly large. This finding is aligned to the findings of Huang (2013) who revealed that gender differences in self-efficacy are domain-specific and that females may have higher self-efficacy in areas related to research and communication. In the context of science education, a study by Yusoff et al. (2019) investigated self-efficacy among secondary school students and found that female students reported higher self-efficacy scores ($M = 3.49$, $SD = 0.363$) compared to male students ($M = 3.28$, $SD = 0.384$). The difference was statistically significant ($t(185) = -3.926$, $p < 0.05$), indicating that female students had greater confidence in their scientific abilities. Similarly, a study by Aguirre Chavez et al. (2015) examined academic self-efficacy among college students and found that female students reported higher levels of self-efficacy compared to male students.

Furthermore, graduate students had higher mean score ($M=3.87$, $SD=0.60$) than undergraduate students ($M=3.61$, $SD=0.83$), but the mean difference was found to be not statistically significant. This implies that social science students share relatively similar levels of research efficacy regardless of their academic level whether they are in undergraduate level or in graduate level. This could also mean that students in undergraduate and graduate levels are receiving relatively the same and effective research training from the ISU. This result is similar to the study conducted by Rizi, Najafi, & Taheri (2015) at Isfahan University of Medical Sciences who assessed research self-efficacy among students across different educational level. Their results indicated that while doctoral students had slightly higher mean scores, the differences were not statistically significant.

Table 4. Level of Research Efficacy grouped according to Course Program

Program	*N*	*Mean*	*SD*	*F(3,52)*	*Sig.*
BS in Psychology	12	3.65	.85	.170	.916
BSE major in Social Science	14	3.83	.59		
MA in Psychology	17	3.69	.89		
MAEd in Social Science	13	3.79	.66		

One-way analysis of variance (ANOVA) was requested to gauge if significant difference exists in the research efficacy level of the students when grouped according to course programs. Results presented in Table 4 indicate no statistically significant differences in research self-efficacy among students

from different academic programs ($F(3,52) = 0.170$, $p = 0.916$). All programs yielded mean scores within the high level, suggesting that students across these disciplines feel similarly confident in their research capabilities.

This uniformity in research self-efficacy across diverse academic programs may reflect the Isabela State University's consistent approach to research instruction. Consistent pedagogical strategies and research training across disciplines can lead to incomparable levels of self-efficacy among students, regardless of their specific field of study. The National Research Council and among its renowned researchers in 2012 urged the educational institution to apply research-based teaching practices across various field and disciplines to enhance student learning outcomes. Furthermore, Heitzmann et al. (2021) highlight that interdisciplinary collaboration and the integration of concepts from various disciplines can enhance students' research competencies and self-efficacy.

CONCLUSION AND RECOMMENDATION

The results of this study highlights that social science students from both undergraduate and graduate programs at the Isabela State University (ISU) - Echague campus generally exhibit a high level of research self-efficacy. It is worth noting that students demonstrated the highest level of confidence in the ethical conduct of research and the discussion of findings, while the lowest level of confidence was reported in the construction of conceptual or theoretical frameworks. Another highlight in the findings of this study was female students exhibited a significantly higher level of research self-efficacy than the male students. Though the effect size is small, it may still indicate a substantial gender disparity. In contrast, no substantial disparities were identified in terms of program level or academic course, suggesting that institutional research training is consistently effective across programs.

These findings emphasize the initiative of program interventions to increase the research efficacy level of social science students, particularly in the areas of theoretical framework development and research engagement support for male students. Hence, the proposed intervention program is recommended for the purpose of addressing this issue and enhancing the research efficacy of social science students in ISU Echague.

RISE: Research Immersion and Skills Enhancement

Rosedelyn C. Da Jose

A. Program Objectives

The RISE program aims to enhance the research efficacy of undergraduate and graduate students enrolled in the Social Science programs under the College of Arts and Sciences (CAS) and the College of Education (CEd) at Isabela State University – Echague campus. Specifically, the program seeks to:

a. strengthen competencies in conceptual/theoretical framework development, identified as a comparatively weaker area based on diagnostic assessments;
b. improve skills in critical analysis, literature synthesis, ethical decision-making, and advanced data interpretation;
c. narrow the gender gap in research efficacy, with targeted strategies addressing lower self-reported efficacy among male students;
d. build a sustainable, collaborative, and research-driven culture through long-term mentorship, peer engagement, and public research engagement; and
e. achieve a measurable increase in research self-efficacy from the "High" to "Very High" range across all indicators.

B. Program Components

1. Conceptual Framework Masterclass

- Objective: To deepen students' understanding and application of theoretical and conceptual frameworks in research.

- Rationale: Results show that students are least confident in this area despite overall high research efficacy.
- Activities:
  - Weekly hands-on workshops using actual thesis examples.
  - Conceptual mapping sessions to practice linking variables, theories, and phenomena.
  - Formulation clinics led by faculty where students build frameworks collaboratively.

Facilitators: Research faculty, experienced thesis panelists, alumni researchers from undergraduate and graduate programs.

2. Gender-Sensitive Research Coaching

- Objective: To address the gender-based disparity in research efficacy, particularly supporting male students.
- Strategy:
  - Designated mentoring groups for male students to explore barriers and build motivation.
  - Research storytelling sessions featuring successful male alumni or faculty researchers.
  - Integrate gender-inclusive pedagogy to reinforce equitable learning.

Optional Component: Establish Male Research Circles—peer groups focused on accountability, resource sharing, and guided sessions.

3. Research Boot Camps

- Objective: To enhance practical research competencies across all efficacy domains.
- Schedule: Conducted every semester for 2–3 consecutive days during breaks or weekends.
- Modules Include:
  - Quantitative and Qualitative Analysis using SPSS, Jamovi, Python R
  - Ethics Simulation Workshops (e.g., navigating plagiarism, consent forms)
  - Mock Proposal Defenses for panel feedback
  - Academic Writing Clinics (e.g., APA formatting, logical flow, argumentation)

Resources Needed: Computer labs, licensed software access, printed modules, guest statisticians/ methodologists.

4. Peer-Led Research Circles

- Objective: Foster collaborative, student-centered learning and reflection.
- Structure:
  - Groups of 4–6 students from mixed levels (undergraduate and graduate).
  - Biweekly sessions, either online or in-person.
  - Peer presentations, reading assignments, Q&A segments, and critique practice.

Outcome: Promotes mutual support, reduces research anxiety, and facilitates cross-level mentoring.

5. Research Mentorship Program (RMP)

- Objective: To provide individualized and continuous research guidance.
- Structure:
  - Each student is assigned to a mentor (faculty member, research-inclined alumni, or senior graduate student).
  - Mentorship covers topic selection, methodology consultation, and emotional/motivational support.
  - Approach:
  - Quarterly check-ins, shared workspaces (e.g., Google Docs), and documented mentor logs.

Long-Term Impact: Cultivates a culture of transformational mentorship, increases research completion

rates, and builds confidence.

6. Annual Student Research Colloquium

- Objective: To improve students' confidence and competence in presenting and defending research outputs.
- Format:
  - Open to all research students from CAS and CEd.
  - Divided into proposal, results presentation, and poster categories.
  - Panel: Friendly reviewers composed of faculty, alumni, and guest researchers from partner institutions.
  - Benefits:
  - Public speaking practice
  - Constructive critique

Opportunities for collaboration and recognition

C. Program Monitoring and Evaluation

To ensure the effectiveness of the RISE program, a systematic Monitoring and Evaluation (M&E) framework will be implemented:

- Quantitative Assessment:
  - Pre- and post-program administration of the Comprehensive Research Self-Efficacy Scale (C-RSES) to measure changes in perceived research efficacy.
  - Qualitative Feedback:
  - Focus Group Discussions (FGDs) and reflection essays after each major component (e.g., boot camps, masterclasses).
  - Performance Metrics:
  - Monitoring of proposal/thesis submission rates, oral defense pass rates, and faculty evaluations. Student satisfaction surveys and mentor performance logs.

D. Expected Outcomes

Upon successful implementation, the following outcomes are anticipated:

1. Improved theoretical and conceptual framework construction capabilities across all student levels.
2. Significant increase in research efficacy, elevating students from "High" to "Very High" self-assessed competencies.
3. Reduction in gender disparities, particularly improving male students' confidence and engagement in research.
4. Establishment of a sustainable peer mentorship and research community within and across CAS and CEd.

Increased number and quality of completed theses, research presentations, and publications among students.

REFERENCES

Aguirre Chavez, J. F., uñoz Beltran, F., Chavez Guerrero, A., Zueck Enriquez, M. del C., & Jasso Reyes, J. (2015). A gender study on college students' academic self-efficacy. *Science Journal of Education*, 2(6), 180–184. https://doi.org/10.11648/j.sjedu.20140206.12

Ashrafi-Rizi, H., Najafi, N. S. S., Kazempour, Z., & Taheri, B. (2015). Research self-efficacy among students of Isfahan University of Medical Sciences. Journal of education and health promotion, 4(1), 26.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Bieschke, K. J., Bishop, R. M., & Garcia, V. L. (1996). The utility of the research self-efficacy scale. *Journal of Career Assessment*, 4(1), 59–75. https://doi.org/10.1177/106907279600400105

Bishop, R. M., & Bieschke, K. J. (1998). Applying social cognitive theory to interest in research among counseling psychology doctoral students: A path analysis. *Journal of Counseling Psychology*, 45(2), 182–188. https://doi.org/10.1037/0022-0167.45.2.182

Cassidy, S. (2015). Resilience building in students: The role of academic self-efficacy. Frontiers in Psychology, 6, 1781. https://doi.org/10.3389/fpsyg.2015.01781

CHED Memorandum Order No. 20, Series of 2013. *General Education Curriculum: Holistic Understandings, Intellectual and Civic Competencies.*

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Forester, M., Kahn, J. H., & Hesson-McInnis, M. S. (2004). Factor structure of the Research Self-Efficacy Scale. *Measurement and Evaluation in Counseling and Development*, 36(3), 125–142.

Forester, M., Kahn, J. H., & Hesson-McInnis, M. S. (2004). Factor structures of three measures of research self-efficacy. *Journal of Career Assessment, 12*(1), 3–16. https://doi.org/10.1177/1069072703257719

Haider, Z., & Dasti, R. (2022). Mentoring, research self-efficacy, work–life balance and psychological well-being of doctoral program students. International Journal of Mentoring and Coaching in Education, 11(2), 170–182. https://doi.org/10.1108/IJMCE-07-2020-0036

Heitzmann, N., Opitz, A., Stadler, M., Sommerhoff, D., Fink, M. C., Obersteiner, A., ... & Fischer, F. (2021). Cross-disciplinary research on learning and instruction–coming to terms. Frontiers in Psychology, 11, 562658.

Huang, C. (2013). Gender differences in academic self-efficacy: A meta-analysis. *European Journal of Psychology of Education*, 28(1), 1–35. https://doi.org/10.1007/s10212-011-0097-y

Kahn, J. H., & Scott, N. A. (1997). Predicting research productivity: The importance of self-efficacy and interest. *Journal of Counseling Psychology, 44*(3), 267–273. https://doi.org/10.1037/0022-0167.44.3.267

Kahn, J. H., & Scott, N. A. (1997). Predictors of research productivity and science-related career goals among counseling psychology doctoral students. *Counseling Psychologist*, 25(1), 38–67.

Lambie, G. W., & Vaccaro, N. (2011). Doctoral counselor education students' levels of research self-efficacy, perceptions of the research training environment, and interest in research. *Counselor Education and Supervision*, 50(4), 243–258.

Madu-Koma, E., & Adekunle, O. A. (2022). Information literacy, research self-efficacy, and research productivity among doctoral students. *International Journal of Doctoral Studies, 17*, 479–511. https://doi.org/10.28945/4997

National Center for Education Statistics. (2022). Digest of education statistics, 2021 (NCES 2022-009). U.S. Department of Education. https://nces.ed.gov/programs/digest/2021menu_tables.asp

National Institute of Environmental Health Sciences. (n.d.). *What is ethics in research and why is it important?* Retrieved from https://www.niehs.nih.gov/research/resources/bioethics/whatisNIEHS

National Research Council, Singer, S. R., Nielsen, N. R., & Schweingruber, H. A. (2012). Discipline-based education research: Understanding and improving learning in undergraduate science and engineering (pp. 6-11). Washington, DC: National Academies Press.

Onwuegbuzie, A. J. (2000). Academic procrastination and statistics anxiety. *Assessment & Evaluation in Higher Education*, 25(1), 3–19. https://doi.org/10.1080/02602930050025087

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly*, 19(2), 139–158. https://doi.org/10.1080/10573560390143085

Peng, X., Tai, X., & Zhou, J. (2023). The impact of the mentoring relationship on the research self-efficacy of graduate students: The moderating role of stress and its regulatory impact on stress mindset. Academic Journal of Management and Social Sciences, 6(1), 45–60. https://doi.org/10.54097/a2hhbp74

Phillips, J. C., & Russell, R. K. (1994). Research self-efficacy, the research training environment, and research productivity among graduate students in counseling psychology. *The Counseling Psychologist*, 22(4), 628–641. https://doi.org/10.1177/0011000094224008

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15–31). Academic Press.

Seyedi-Andi, S. J., Bakouei, F., Adib Rad, H., Khafri, S., & Salavati, A. (2019). The relationship between self-efficacy and some demographic and socioeconomic variables among Iranian Medical Sciences students. Advances in Medical Education and Practice, 10, 645–651. https://doi.org/10.2147/AMEP.S185780

Tan, C. Y., Gao, L., Hong, X., & Song, Q. (2023). Socioeconomic status and students' science self-efficacy. British Educational Research Journal, 49(4), 791–812. https://doi.org/10.1002/berj.3869

Tas, Y., Demiral-Uzan, M., & Uzan, E. (2023). Self-Efficacy for Research: Development and Validation of a Comprehensive Research Self-Efficacy Scale (C-RSES). International Journal on Social and Education Sciences, 5(2), 275-294.

Tiyuri, A., Saberi, B., Miri, M., Shahrestanaki, E., Bayat, B. B., & Salehiniya, H. (2018). Research self-efficacy and its relationship with academic performance in postgraduate students of Tehran University of Medical Sciences in 2016. Journal of education and health promotion, 7(1), 11.

Way, J. D., Morgan, A. C., Claxton, L. D., & Bedeian, A. G. (2021). Research self-efficacy and productivity in academic scientists. *Journal of Research in Personality, 93*, 104084. https://doi.org/10.1016/j.jrp.2021.104084

Yusoff, N. M., Mahmood, N. H. N., & Ghazali, S. N. (2019). Self-efficacy relationship on science achievement amongst national secondary school students. *Creative Education*, 10(12), 3326–3337. https://doi.org/10.4236/ce.2019.1012260

Zimmerman, B. J., & Cleary, T. J. (2006). Adolescents' development of personal agency: The role of self-efficacy beliefs and self-regulatory skill. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 45–69). Information Age Publishing.


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