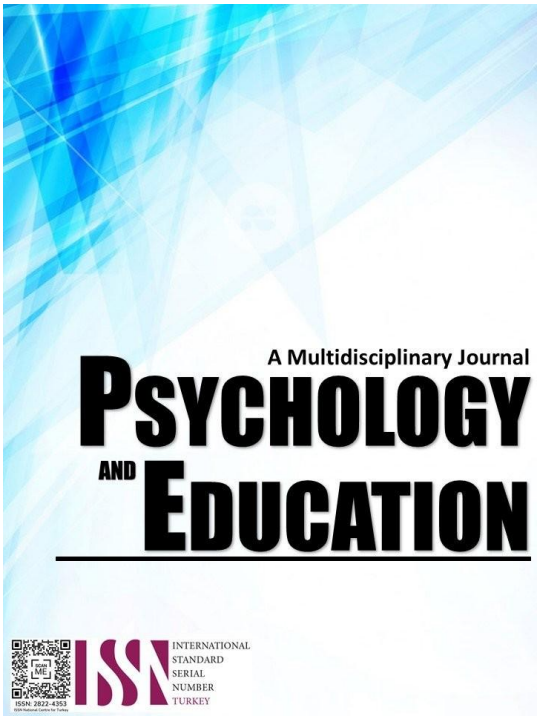
UNDERLYING CAUSES OF RESEARCH ANXIETY AMONG GRADE 12 ACADEMIC TRACK SENIOR HIGH STUDENTS



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Research Article

Underlying Causes of Research Anxiety among Grade 12 Academic Track Senior High Students

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Abstract

Research is part of the curriculum in Senior High School, particularly in the Philippines. Students frequently struggle with research anxiety, which affects their performance on academic assignments, especially when it comes to writing research papers. This research sought to identify the cause contributing to research anxiety with an emphasis on writing competency, mathematical proficiency, and experiential knowledge, of Grade 12 Senior High School students enrolled in Talisay City National High School's academic track. This study used a descriptive-survey research approach, and slovin's formula was used to choose 219 respondents. A validated questionnaire created by the researcher was used to gather data, and weighted means were used for analysis. The results showed a moderate level of concern in writing proficiency, especially when it came to structuring thoughts and following citation formats. High levels of anxiety were observed in mathematical proficiency, particularly in applying statistical methods and interpreting quantitative data, as well as in experiential knowledge, especially in presenting research findings and balancing academic responsibilities. The researchers concluded that workshops, peer-led study groups, and mentoring programs, are essential to address these issues and help students overcome their research anxiety effectively.

Keywords: *research anxiety, writing competency, mathematical proficiency, experiential knowledge*

Introduction

Research is part of the curriculum in Senior High School, particularly in the Philippines. A broad concern among students when performing in research-based activities is research anxiety in classrooms. Research anxiety is a prevalent phenomenon among students, which differs from normal study stress because it is driven by the uncertainty and independence involved in the research process, which is often sowed by vague directions and few corrections. Research poses unique challenges of innovation, funding, and project management that often can cause feelings of isolation, self-doubt, or fear of failure or rejection.

According to Chi et al. (2022) students' performance, and overall well-being in higher education, is increasingly influenced by anxiety related to research. Research-related anxiety has become a significant factor influencing students' experiences in higher education. It highlights a connection between this anxiety and students' performance as well as their overall well-being. This implies that the pressures and challenges associated with conducting research are not only academic but also have broader implications for students' mental and emotional health.

Simoës-Perlant et al. (2022) observed a substantial amount of pressure to perform and achieve is placed on high school children, underscoring the need to address this issue earlier in life . These issues have become even more pressing with the COVID-19 epidemic, which has transformed learning environments and increased academic demands. As the importance of research outputs in academic and professional success increases, institutions need to cope with the psychological consequences that these changes evoke among students.

There are many factors that influence research anxiety. Often students receive little practice nor confidence in writing skills, even though the ability to write is crucial for not only structuring but also presenting research. Data analysis, yet another major aspect of many research projects, is also a science of mathematics. The absence of research experience where students do not possess enough information to deal with the intricacies and nuances of the research process that impacts students is considerably enhanced by these challenges. Research anxiety impacts not only academic endeavors but also all aspects of life. It harms students' mental health and erodes their ability to focus, push through difficulties and achieve. When left unresolved, anxiety results in burnout and is counter-productive to academic and career success. It is vital for institutions to understand the importance of creating a nurturing environment to lessen such pressures.

In this study, the researchers aim to determine the causes of research anxiety of Grade 12 Academic Track students in Talisay City National High School. The results will serve as the basis for the intervention plan that will be proposed to counter said academic problem.

Research Questions

The study identified the underlying causes of research anxiety among Grade 12 Senior High Students in Talisay City National High School in Dumlog, Talisay City, and Cebu as the basis for the crafted intervention plan. Moreover, this sought to answer the following questions:

1. To what extent are the causes contributing to research anxiety among grade 12 students in terms of:
    1.1 writing competency;

1.2 mathematical proficiency; and
1.3 experiential knowledge?

2. Based on the study's findings, what intervention plan can be crafted?

Literature Review

Students might be taught the theories of research studies, but in most cases, they do not have hands-on experience conducting the research. It is a requirement for students in educational institutions to write research papers. Besides going through basic courses, students have been mandated to produce research papers that tackle certain issues in society or add up to the pool of knowledge required by the new requirements of academic learning environments (Real, 2022). Research is defined as a process of seeking knowledge that is either novel or supports existing facts (Skidmore, 2023). Its primary goal is to enhance knowledge across various domains — biological, social, and physical — ultimately promoting societal advancement and informed decision-making (DiscoverPhDs, 2021). Integrating research practices in schools can significantly improve students' critical thinking, problem-solving abilities, and independent learning. As noted by Natalie, 2022, a thesis defense is a podium where the student will be presenting their research in front of academic professionals to judge the quality of work done. Although this process develops students' academic skills, it mostly leads to research anxiety which involves stress, fear, or apprehension.

Research Anxiety

Students are highly subjected to research anxiety which results from the high demands of the requirements of the academic work. AlKandari (2020) affirms that one of the toughest subjects in higher education curriculums is research. With complex research, some of the very long processes associated with study preparation, execution, and analysis entail accuracy, originality, and analytical skills, which can weigh heavily on a student's minds as they balance these processes with their other responsibilities (Salmon, 2024). Among the contributors to research anxiety, first among these is a lack of foundational knowledge in mathematics since every bit of statistical data requires accurate computation. Without adequate mathematical skills, students are not able to make proper sense of data and, therefore, cannot make proper analysis, and this builds anxiety (Salmon, 2024). Another cause of research anxiety is fear of failure. Singh (2024) states that students are under tremendous pressure to produce quality work, and the fear of not performing well is paralyzing, which prevents full engagement with the research process.

Time pressure further adds to research anxiety. López et al. (2021) state that students who had to finish assignments with tight deadlines performed worse because their cortisol levels were higher. As asserted by Mirza et al. (2021), these psychosocial problems can have consequences for the well-being of both one's physical and mental health. Coping strategies and prevention techniques need to be developed to tackle these issues. Solutions offered by Sanjeev and Khanagar (2021) include support programs, collaboration among peers, and time management.

Other initiatives include math skills enhancement programs, peer mentoring, and time management workshops. Students need to have the appropriate competencies to research effectively. Research anxiety is further alleviated through the role played by teachers. According to Damayanti and Listyani (2020), a positive educational atmosphere diminishes anxiety due to the factors of trust and communication between the teacher and student. If the students believe that their teachers are supporting them, they will most likely get over their worries and take an active role in the process of research.

Writing Competency

Writing proficiency is generally considered to be an essential ability for success in both the classroom and the workplace. According to academics, writing abilities are crucial for expressing ideas clearly and proving comprehension in a variety of subject areas.

Writing proficiency is essential for fostering students' capacity to carry out research and successfully communicate their findings, according to Cuayzon (2024). His research on 12th graders highlighted how regular exposure to research-based activities and organized writing assignments improves students' ability to formulate well-reasoned arguments. He pointed out that because STEM students receive rigorous methodological instruction, they do better in research writing.

The concepts of writing competency were also covered by Ismail and Sabil (2019), who emphasized the need of coherence, cohesiveness, and clarity in generating high-quality written work. They discovered that pupils are unable to produce high-quality writing when they struggle with these areas, which include weak sentence transitions and a lack of paragraph coherence. Their study emphasized the value of repeated practice and controlled feedback in overcoming these obstacles.

Mathematical Proficiency

Mathematical proficiency is a critical component of academic success and research across various disciplines. It encompasses a range of skills, including conceptual understanding, procedural fluency, strategic competence, and adaptive reasoning. Pasigon (2024) noted that mathematical proficiency have demonstrated direct and indirect effects on students' academic performance, particularly problem-solving and research-based applications. Mathematical proficiency is closely linked to problem-solving skills, which are essential in academic research. The study by Dinglasan et al. (2023) found that implementing certain approaches aimed at enhancing students' engagement and contextual understanding significantly improved their abilities in understanding problems, devising plans, carrying

them out, and reviewing their solutions. This suggests that strong mathematical foundations equip students with analytical tools necessary for conducting rigorous academic research.

Experiential Knowledge

Experiential knowledge, derived from hands-on learning and direct engagement with real-world scenarios, has become increasingly recognized as a vital component in the academic and research domains. (Utomo, 2019) stated that experiential learning provides students with opportunities to engage in authentic research activities, such as data collection, analysis, and interpretation. This approach not only reinforces experiential knowledge but also cultivates essential skills for research.

Experiential knowledge emphasizes the insights and understanding gained through direct involvement and reflection on practical experiences. Unlike purely theoretical learning, experiential knowledge bridges the gap between abstract concepts and real-world applications, thereby enhancing students' ability to think critically and solve problems (Kong, 2021)

Methodology

Research Design

Descriptive research aims to characterize the distribution of one or more variables without taking into account any theories on causality or other factors (Aggarwal & Ranganathan, 2019). Therefore, this study employed a descriptive research design and conducted quantitative research using a descriptive approach to determine the underlying causes of research anxiety among academic strand students. A survey questionnaire was used to gather quantitative data in order to know the causes of research anxiety of Talisay City National High School's Academic Strand pupils.

Respondents

The respondents of the study were the Grade 12 Science, Technology, Engineering and Mathematics (STEM), Accountancy, Business and Management (ABM), Humanities and Social Sciences (HUMMS), and General Academic Strand (GAS) strands from the Academic track students of Talisay City National High School for the Academic Year 2023-2024 with a total population of 483 students. The STEM strand has 113 students, the ABM strand has 133 students, the HUMMS strand has 163 students, and the GAS strand has 74 students. In determining the number of sample sizes, the researchers used Stratified random sampling and Slovin's formula with a margin of error of 5%. Therefore, there are 219 respondents, 51 of whom were from the STEM strand, 60 from the ABM strand, 74 from the HUMMS strand, and 34 from the GAS strand.

Instrument

A researcher-made questionnaire was utilized as an instrument for data collection. The preparation of the instrument was made by consulting with academic peers, checked by the teachers handling the same course, and validated by the experts to confirm its validity. The tool measures the level of the possible causes of a student's research anxiety. The instrument is composed of 3 sections, the first section is Writing Competency, followed by Mathematical Proficiency, and lastly is Experiential Knowledge. The researchers determined the personal causes level of the learners through the following categories: (5) Strongly Agree, (4) Agree, (3) Neutral, (2) Disagree, and (1) Strongly Disagree. The scale for scoring the response of the student-respondents is as follows.

Table 1. *Table for Interpretation*

Grade Scale	*Range*	*Description*	*Descriptive Interpretation*
5	4.50-5.00	Strongly Agree	Very High
4	3.50-4.49	Agree	High
3	2.50-3.49	Neutral	Moderate
2	1.50-2.49	Disagree	Low
1	1.00-1.49	Strongly Disagree	Very Low

Procedure

The data for the study was gathered through a systematic procedure. First, the researchers secured permission from the research coordinator of Talisay City National High School to conduct the study. A researcher-made questionnaire was prepared and distributed voluntarily through a survey with the informed consent of the participants. The researchers clearly explained the study's objectives and ethical considerations to make the respondents understand their role. There was enough time to complete the questionnaire as one pleased. After gathering all the responses, data was entered into Microsoft Excel with statistics. The mean, percentage, and standard deviation were statistical tools that were used for analyzing data. It enabled an understanding of the central tendencies and variations of the responses. The final stages of the data-gathering process included findings being presented, analyzed, and interpreted in light of statistical findings.

Ethical Considerations

The researchers conducted the study in accordance with all regulations, especially those pertaining to ethics. This study was approved by the relevant authorities and subjected to an ethical review prior to its execution. The goal, anticipated length, and advantages of the

study were explained to the participants. The researchers made sure that every research activity complied with the strictest safety and human rights regulations, especially when it came to data collection methods like distributing the survey questionnaire in person.

Results and Discussion

The results of the study's research question are presented in this section. A weighted mean was utilized in this study to determine the personal level of each possible cause of research anxiety.

Respondents' Personal Level of each possible causes of research anxiety

This part is composed of 3 different tables for the personal level of each possible cause of research anxiety. Table 2-4 shows the students' level of the possible causes of research anxiety in terms of Writing Competency, Mathematical Proficiency, and Experiential Knowledge.

Table 2. *Writing Competency as a Cause of Research Anxiety*

Statement	*Mean*	*Interpretation*
Writing research papers makes me nervous because I worry about how well I can organize my thoughts.	3.55	High
I worry about vocabulary and language when I'm writing my research paper.	3.47	Moderate
I experience stress over proper citation and referencing styles.	3.55	High
I worry that my writing skills are lacking in meeting academic standards.	3.47	Moderate
I feel insecure about my grammar and sentence structure in research writing.	3.40	Moderate
Average weighted mean	3.49	Moderate

In table 2 shows the students' level of possible causes of research anxiety in terms of writing competency. The table reveals the Average Weighted mean 3.49 Interpreted as "Moderate" and the highest mean statements "Writing a research paper makes me nervous because I worry about how well I can organize my thoughts" and "I experience stress over proper citation and referencing styles" both have the highest mean of 3.55, with an interpretation of high. on other hand the lowest mean statement "I feel insecure about my grammar and sentence structure in research writing" have the lowest mean of 3.40 with an interpretation of "moderate", This implies many students may feel unsure about their writing might not be clear or effective, and may also worry about the grammar, structure, or citation style leading to anxiety in writing a research paper. According to England et al. (2019) research anxiety affects student's performance and persistence indicating that students perceive organizing their ideas and mastering citation formats as significant stressors, reinforcing the need for enhanced instructional focus in these areas to mitigate the anxiety. This indicate that although students' worry in this area is not as great as their worries about structuring their ideas or using proper citation styles, they may benefit from moderate assistance in developing their grammar abilities. According to Alova & Alova (2023), targeted strategies for improving grammar can lead to significant improvements in students' writing skills, reinforcing the need for educational programs that address both grammar and more pressing concerns like organization and citation.

Table 3. *Mathematical Proficiency as a Cause of Research Anxiety*

Statement	*Mean*	*Interpretation*
I feel nervous when interpreting data and statistical results.	3.47	Moderate
I struggle with applying appropriate statistical methods in research.	3.64	High
I worry about my accuracy in mathematical calculations.	3.55	High
I am anxious about understanding mathematical formulas used in research.	3.54	High
I find it difficult to confidently interpret quantitative data.	3.46	Moderate
Average weighted mean	3.53	High

As shown Table 3 Students' level of possible causes of research anxiety in terms of mathematical proficiency. The table reveals that the Average weighted mean at 3.53 interpreted as "High" And highest mean at 3.64, statement "I struggle applying appropriate statistical methods in research", while the lowest mean in the is at 3.46, statement "I find it difficult to confidently interpret quantitative data" This indicate that student may not fully mastered the different statistical methods, they may struggle to select the correct one for their data.

In addition, they may also struggle in interpreting quantitative data since they have not fully mastered the different statistical methods. According to Pespeñan and Cababat (2023) students are still honing their analytical and numerical skills, students may experience significant levels of anxiety, especially when they are having trouble using statistical approaches in their research. They suggest that addressing anxiety in applying statistical methods could enhance student's overall confidence and performance in research related tasks. In addition, implementing evidence-based study strategies, such as self-testing and spaced repetition, can enhance students' understanding of mathematical concepts. Encouraging regular practice helps students become more comfortable with the material. (Pizzie and Kraemer, 2023).

As shown in Table 4 shows students' level of possible causes of research anxiety in terms of experiential knowledge, The table reveals that students are most anxious when it comes to presenting or defending their research, as the statement "I feel nervous about presenting or defending my research findings" has the highest mean of 4.01 and an interpretation of "High" however, among the causes of research

anxiety, the statement "i feel overwhelmed by a lack of understanding of the research processes" has the lowest mean 3.59, which is also interpreted as "high".

Table 4. *Experiential Knowledge as a Cause of Research Anxiety*

Statement	*Mean*	*Interpretation*
I feel I lack practical experience in conducting research.	3.70	High
I am anxious about balancing research work with other academic responsibilities.	3.80	High
I feel nervous about presenting or defending my research findings.	4.01	High
I feel stressed by the pressure to achieve high grades on research assignments.	3.93	High
I feel overwhelmed by a lack of understanding of the research processes.	3.59	High
Average weighted mean	3.81	High

Despite this, it still indicates a significant level of anxiety related to understanding research processes. This suggest that students, especially those in earlier stages of their academic journey, might not have had enough opportunities to practice presenting their research or engaging in academic discourse. Without prior exposure to the experience, they may feel unprepared and anxious when asked to present. According to Xue Zhao (2024) students who lacked prior exposure to rigorous academic environments experienced heightened anxiety. In addition, according to Nakitiibwa C. et al. (2024) suggest that experiential learning not only enhances academic performance but also boosts students' confidence and motivation, which are essential for successfully navigating research processes.

Conclusion

This study aimed to identify the underlying causes of research anxiety In Grade 12 Academic track students. The research findings shows that the students mostly struggle with experiential knowledge followed by mathematical proficiency and Writing proficiency being the lowest, this indicates that students' highest cause of anxiety comes from the lack of experiential knowledge. In addition, attention in mathematical and writing proficiency also indicate the need for a strategy in mitigating these sources of research anxiety, to fill in the gap left by the provided result, an intervention plan must be made, A mitigating strategy such as Experiential learning, self-testing and spaced repetition and lastly an educational program that address both grammar and other concerns like organization and citation. Students' may benefit from all of this and lessen their anxiety in the field of research.

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