

Senior High School Students' Attitudes Towards Research

Bryan Manrique-Gallos

Holy Child Catholic School, Plaza A. Hernandez, Tondo, Manila, 1012, Philippines

E-mail: bryan.gallos@hccs.edu.ph

Abstract

The Attitude towards Research Scale, developed by Elena T. Papanastasiou in 2005, was used to investigate the attitudes of 222 senior high school students from Holy Child Catholic School during the 2017–2018 school year who had already completed the Department of Education-mandated Practical Research Subjects (PR1 and PR2) for the K-12 program. The responses were evaluated using IBM-SPSS and descriptive survey and correlational research methodologies, as well as Pearson correlation coefficient and factorial MANOVA. The correlation between and among the five ATR subscales revealed that research positivity increases as research anxiety decreases, or vice versa, implying that SHS students are more likely to have a positive attitude toward research if they are having minimal difficulty doing research and thus have a lower anxiety level. In order to further explore students' interest in and attitudes toward research, it is suggested that teachers who are interested in the educational component of research construct an easier and course-related research program for building students' favorable attitudes about research. For SHS students, research should not be a burden but rather a problem-solving tool as they prepare for more rigorous research work in college. Establishing the importance and relevance of research to SHS students would help them appreciate research learning.

Keywords: Research attitude, Research positivity, Anxiety, Senior High School

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1. Introduction

Research (Shaukat, et.al, 2014) is crucial in our everyday lives since it has become one of the most important intellectual possessions (Ogvan et.al, 2014) for a person to be able to adapt his style of life to the needs and demands of society. Swindoll (2012) defined it as the process of gathering and examining data in order to preserve knowledge of a phenomenon under investigation. Fishbein and Ajzen (1975) believes that the contribution towards the understanding of the phenomenon and delivering it to others is the aim of research as it gives rewarding learning experiences for students, producing graduates of high levels personal and professional success.

In terms of research, one's attitude might have a beneficial or bad impact. According to Zan and Di Martino (2007), attitudes are made up of beliefs, emotions, behaviors, and their interactions. Because the study aimed to examine how people think, feel, and behave when it comes to research, it's critical to figure out how they feel about it, in order to enhance the optimistic view of research among students and the pessimistic view should be avoided (Papanastasiou, 2005).

1.1 Review of Literature

Nowadays, research (Hussain et al, 2016) has become one of the most valuable reasoning assets for any human being seeking to change his way of life. The enormous progress of mankind is due to research, which has become an essential role in and of itself. Since the 2016 school year, the needs for education research have been met in the Philippines by immersing pioneers of senior high school programs. For grades 11 and 12, the Department of Education (2013) includes two (2) applied topics. All of the tracks' K-12 curriculums contain Practical Research 1 (Qualitative Research) and Practical Research 2 (Quantitative Research). Through methodical investigation or research, the topics attempt to build critical thinking and problem-solving abilities.

GKS (2015) and Taylor (2017) discussed the important factors of resisting research in our daily life. The fear of learning, making change and being criticized are the possible factors that hold us back in doing a research. The fear of learning posits reflection on the things we don't want to hear or see, research reveals everything. The fear of change triggers the resistance for research since it focuses on solving problems and make an abrupt change on it. Research requires action on what is concluded and recommended. Lastly, the fear of being criticized, the risk of hearing feedbacks on what is done. Researchers often afraid to hear negative comments about the results which might make individuals hesitant to pursue another course of study.

As the demand for research grows, most students are required to write a research piece that addresses topics or themes linked to their interest. However, Papanastasiou (2005) found in her study that undergraduates have a negative attitude toward beginning research courses. Students' attitudes (Miandashti and Rezaei, 2013) have a direct impact on how they approach research and all research-related activity. Positivism allows pupils to answer difficulties rapidly, but negativity hinders research attempts. Students enrolled in a basic research courses exhibit

the following characteristics, according to Early (2014), as based on fifty-one articles he reviewed: Fail to see the relevance of research to one's life; Anxious or nervous about the course difficulty; Uninterested and poorly motivated to learn; Poor attitudes in approaching the course; and Misconceptions about the course. Early's study presented the pessimistic side of students wherein they have negative thoughts about research.

There are difficulties (Boser & Daugherty, 1998) which were supposed to be associated with the negative attitudes of the students towards research such as the problems of research, the amount of work assigned to students and their concerns about the topic under discussion leads to increased research difficulty and anxiety among pupils. Similarly, past research has identified attitude as the most important predictor of an individual's educational success.

Furthermore, Murtonen and Lehtiner (2003) found that students who join research courses with a sense of worry and anxiety are unfamiliar with research methodologies. This leaves people feeling overwhelmed and unable to comprehend and overcome the situation. Also, students are not even sure of the reason of completing the course and their usefulness in their lives (Pan & Tang, 2004). These attitudes against research raised worries among research professors, as it was discovered that worry had a detrimental impact on learning (Onwuegbuzie & Seaman, 1995). These attitudes are concerning because they may inhibit students from appreciating research and its implications on future employment. Monahan (1994) also highlighted that professionals who have completed their research courses and experienced anxiety were uninterested in conducting research on their own.

The evidence suggests that people's attitudes regarding research have a significant impact on how they approach research. Whether a person has had a positive or negative experience with research, it suggests when he or she will continue to engage in research and will not have an optimistic or pessimistic attitude about it. The principles stated can assist the researcher in coming up with solutions to overcome unfavorable attitudes about study. It's also feasible that the findings of this study will be of great use to research teachers, particularly in senior high school, in assessing their students' attitudes toward research and addressing them appropriately. Likewise, the researcher is looking forward for a better and positive result of the study.

1.2 Conceptual Framework

Figure 1 presents the framework of the study. At first, it seeks the relationship of the five factors affecting research attitude. This indicates whether these factors greatly affect each other. Then, after looking into the relationship, the difference on each factor based on gender, grade level and strand of the academic track of SHS students was recognized. The study developed the general attitude toward research and served as the foundation for recommending whether the attitude is positive or negative after demonstrating the link and differences between the offered variables.

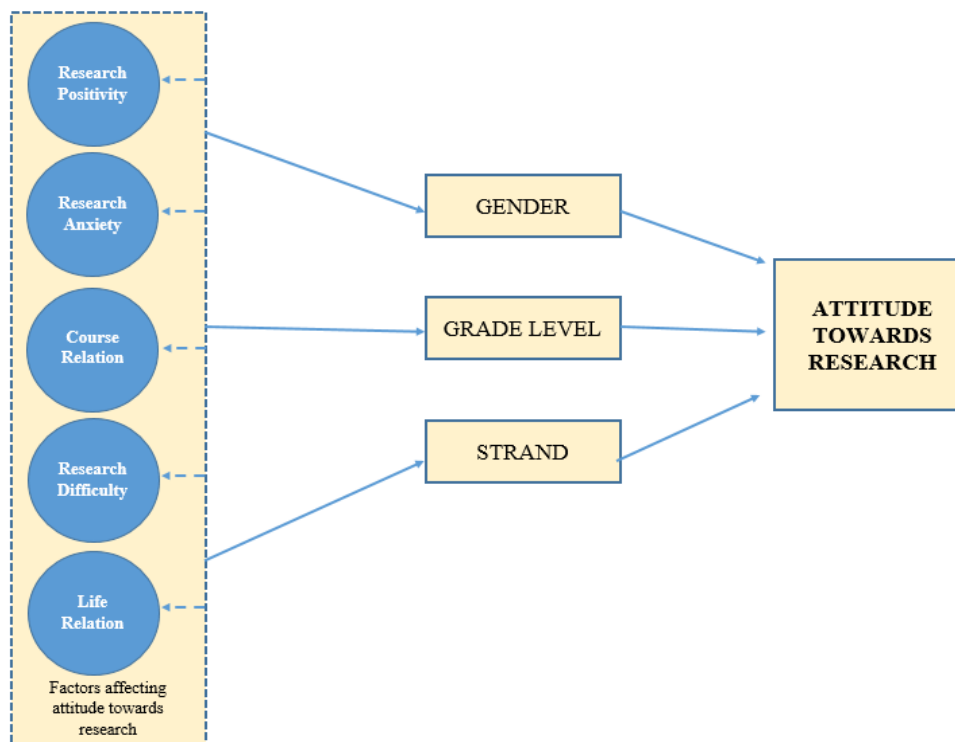


Figure 1. Conceptual Framework

2. Methodology

2.1 Design

Descriptive survey and correlational research design were utilized in order to have a better grasp of students' attitude about research. The descriptive survey design aimed to characterize the students' views in relation to research. On the other hand, correlational design was intended to examine the impact of the five (5) ATR scale between and among each other and the impact of the said scale to gender, grade level and strands of academic track.

2.2 Participants

The sample for this study was selected using a non-probabilistic sampling method, specifically purposive because it includes 222 senior high school students from Holy Child Catholic School SY 2017-2018 who have already completed Practical Research 1 – Qualitative Research and Practical Research 2 – Quantitative Research. Table 1 summarizes the demographic information provided by respondents.

Table 1. Demographic information of respondents

Variable		N	%
Gender	Male	115	51.8
	Female	107	48.2
Age	15	3	1.4
	16	72	32.4
	17	93	41.9
	18	53	23.9
	19	1	.5
Grade Level	11	134	60.4
	12	88	39.6
Strand	ABM	77	34.7
	STEM	81	36.5
	HUMSS	45	20.3
	GAS	19	8.6

2.3 Instruments

The ATR (Attitude towards Research) Scale (Papanastasiou, 2005) was used to assess the attitudes of Holy Child Catholic School SHS students. Originally, the ATR questionnaire had thirty-two (32) items with five (5) components on a seven (7) point likert scale. To prevent midpoint biases, the researcher devise the scale into six (6) points: Research Positivity (ResPosi – items 1–8), Research Anxiety (ResAnx – items 9–16), Course Relationship (CourRel – items 17–25), Research Difficulty (ResDiff – items 26–28), and Life Relationship (LifeRel – items 29–32) are the five elements. Some elements have been modified to make them simpler to grasp for the grade level selected.

The reliability of the scale, which consists of 32-items ($\alpha=.863$) was suggested the items have a relatively high internal consistency. Thus, research positivity subscale consisted 8 items ($\alpha=.906$); research anxiety subscale consisted 8 items ($\alpha=.861$); course relation consisted 9 items ($\alpha=.936$); research difficulty consisted of 3 items ($\alpha=.612$) and life relation consisted 4 items, ($\alpha=.772$) with a limitation of two (2) deleted items for the alpha to increase. Possible reasons (Shaukat, et.al, 2014) for having a low reliability on research difficulty of the ATR scale would be that this factor has less than five items. In addition, contextual differences of the respondents could affect their answers according to their level of understanding.

The form was converted to google form for the easy administration and access for the respondents.

2.4 Data Analysis

The data was analyzed using the Statistical Package for Social Sciences (SPSS-26) program. Mean scores and standard deviation on ATR measures of senior high school students at Holy Child Catholic Academic during the 2017-2018 school year, as well as their variables, were determined using descriptive statistics. The Pearson Correlation Coefficient was used to assess the association between the five components and research attitudes. Thus, the factorial MANOVA (Multivariate Analysis of Variance) was applied to measure the difference of the SHS students' attitude towards research through gender, grade level and the strands of the academic track. Factorial MANOVA is used to see if two or more categorical independent variables (together with their interactions) have a substantial impact on optimally weighted linear combinations of two or more distributed dependent variables (Wuensch, 2015).

3. Results and Discussion

3.1 Results

Table 2 shows that the elements of life-relation and research difficulty had the lowest ATR ratings. Surprisingly, SHS students see research as having a stronger connection to their chosen subject and a more favorable attitude about it. Thus, SHS students' research anxiety was among the lowest, indicating that SHS students are having difficulty with research, and research's relevance to their lives received the lowest mean, indicating that SHS students are unable to determine the value of research in their lives.

Table 2. ATR Statistics

ATR Subscales	(n=222)	
	Mean (m)	SD
Research Positivity	4.2579	.88305
Research Anxiety	4.1847	.93524
Course Relation	4.8694	.92879
Research Difficulty	3.8288	.91616
Life Relation	3.5586	.77427

The Pearson correlation coefficient was used to assess the link between each element. Table 3 reveals that the research positivity of HCCS SHS is somewhat related to their selected course or strand. Similarly, their research anxiousness was found to have a somewhat substantial association with their inability to comprehend research.

The association between the other three components (research anxiety, course relation, and research difficulty) and life relation, on the other hand, revealed a weak significant relationship. Furthermore, there is a weak significant association between course relationship and research difficulties. Furthermore, research positivity has a modest negative association with research anxiety, implying that when SHS feel anxiety in research, their positivity in research is likely to diminish, or vice versa.

Finally, the association between research positivity and research difficulty and life relation, as well as research anxiety and course relation, was shown to be non-significant. This means that these variables have no bearing on one another in terms of study.

As a result, the null hypothesis, that *there is no significant association between the five-factor attitude of HCCS senior high school students toward research*, is rejected, because several of the components revealed moderate and weak relationships with one another.

Table 3. Pearson correlation of ATR Subscales

ATR Subscales	ResPosi	ResAnx	CourRel	ResDiff	LifeRel
Research Positivity	1				
Research Anxiety	-.275**	1			
Course Relation	.631**	-.067	1		
Research Difficulty	-.067	.504**	.144*	1	
Life Relation	.129	.303**	.195*	.340**	1

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

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

Prior to performing the MANOVA, a series of Pearson correlations were run between all of the dependent variables (Research Attitudes) to test the MANOVA assumption that the dependent variables would be moderately linked with one another (Meyer, Gampst, & Guarino, 2006). A noteworthy pattern of correlations was identified among most of the dependent variables, as shown in Table 3, indicating that a MANOVA was acceptable. The Box's M value of 366.400 was also related with a p value of .000, which was judged as significant according to Huberty and Petoskey's (2000) criterion (p.05). For the purposes of the MANOVA, the covariance matrices between the groups were assumed to be unequal.

A factorial multivariate analysis of variance (MANOVA) was used to test the hypothesis that there would be one or more mean differences between gender, grade level, and strand of HCCS SHS students' attitudes about research. Pillai's Trace = .976, $F(15, 221) = 1666.060$, $p.001$, showed a statistically significant MANOVA impact.

The equality of error variance assumption was verified for all five attitudes toward research subscales prior to conducting a series of follow-up ANOVAs. The assumption was satisfied based on a series of Levene's F tests, despite the fact that two of the five Levene's F tests (Research Anxiety and Research Difficulty) were statistically significant ($p > .05$).

3.1.1 Gender

The results of multivariate ANOVA showed that there is no significant difference between gender and attitude towards research subscales, Pillai's Trace = 0.061, $F(1, 221) = 2.60$, $p < .001$. Also, univariate test showed that

there were no significant differences on ATR subscales across gender as shown in Table 4.

Table 4. Gender vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	.225	1	.225	.348	.556
Research Anxiety	2.210	1	2.210	2.880	.091
Course Relation	.945	1	.945	1.246	.266
Research Difficulty	.109	1	.109	.139	.709
Life Relation	1.137	1	1.137	1.958	.163

*p < .05 Reject Ho *p > .05 Accept Ho

Thus, the null hypothesis, *there is no significant difference between the attitude towards research of senior high school students of HCCS in terms of gender* is accepted.

3.1.2 Grade Level

The results of multivariate ANOVA showed that there is no significant difference between grade level and attitude towards research subscales, Pillai's Trace= 0.48, F(1, 221) = 2.025, p <.001. Also, univariate test showed that there were no significant differences on ATR Subscales across grade level as shown in Table 5.

Table 5. Grade Level vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	.036	1	.036	.056	.813
Research Anxiety	1.778	1	1.778	2.316	.130
Course Relation	2.414	1	2.414	3.181	.076
Research Difficulty	.260	1	.260	.333	.565
Life Relation	.366	1	.366	.631	.428

*p < .05 Reject Ho *p > .05 Accept Ho

Thus, the null hypothesis, *there is no significant difference between the attitude towards research of senior high school students of HCCS in terms of grade level* is accepted.

3.1.3 Strands of Academic Track

The results of multivariate ANOVA showed that there is no significant difference between strands of academic track and attitude towards research subscales, Pillai's Trace= .251, F(3, 221) = 3.721, p <.001. Thus, univariate test showed that there were significant differences on four (4) ATR Subscales across strands as shown in Table 6.

Table 6. Strands vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	19.474	3	6.491	10.047	.000
Research Anxiety	15.082	3	5.027	6.552	.000
Course Relation	18.132	3	6.044	7.966	.000
Research Difficulty	11.280	3	3.760	4.806	.003
Life Relation	1.115	3	.372	.640	.590

*p < .05 Reject Ho *p > .05 Accept Ho

Thus, the null hypothesis, *there is no significant difference between the attitude of senior high school students of HCCS in terms of strands of academic track* is rejected since majority of the subscales presented significance.

Post-Hoc LSD was performed to examine individual mean difference comparisons across strands of academic track of SHS students of HCCS and all attitude towards research subscales. The results revealed that all post-hoc mean comparisons were statistically significant (p < .05).

Post-Hoc LSD further showed that SHS students who are taking HUMSS as their strand showed higher research positivity (m=4.266) and research anxiety (m=4.199). SHS students who are taking ABM as their strand showed higher understanding of the relation of their chosen strand with research (m= 4.534) but tend to have more difficulties on doing research (m=4.076). Lastly, SHS students who are taking STEM as their strand greatly understood the relation of research to their own lives (m=3.542).

3.1.4. Between Gender and Grade Level

The results of multivariate ANOVA showed that there is no significant difference between the attitude towards research subscales and gender and grade level of SHS students of HCCS, Pillai's Trace= .051, F(1, 221) = 2.150, p <.001. Thus, univariate test showed that there were significant differences on three (3) ATR Subscales across gender and grade level as shown in Table 7.

Table 7. Gender and Grade Level vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	5.185	1	5.185	8.025	.005
Research Anxiety	.196	1	.196	.255	.614
Course Relation	4.669	1	4.669	6.154	.014
Research Difficulty	.819	1	.819	1.047	.307
Life Relation	1.620	1	1.620	2.791	.096

*p < .05 Reject Ho *p > .05 Accept Ho

This means that the attitude of SHS students towards research (research positivity and course relation) was perceived differently according to gender and grade level. Likewise, grade 11 males (m=4.462) and grade 12 females (m=4.342) has shown positive attitude towards research. In addition, grade 11 males (m=4.994) and grade 12 females (m=4.889) has higher understanding of the relation of research to the course or strand they are taking.

3.1.5 Between Gender and Strand

The results of multivariate ANOVA showed that there is no significant difference between the attitude towards research subscales and gender and strand of SHS students of HCCS, Pillai's Trace= .074, F(3, 221) = 1.033, p <.001. Thus, univariate test showed that there were significant differences on all ATR Subscales across gender and strand as shown in Table 8.

Table 8. Gender and Strand vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	2.987	3	.996	1.541	.205
Research Anxiety	2.017	3	.672	.876	.454
Course Relation	.883	3	.294	.388	.762
Research Difficulty	.627	3	.209	.267	.849
Life Relation	2.063	3	.688	1.185	.317

*p < .05 Reject Ho *p > .05 Accept Ho

This means that all the attitude of SHS students towards research was perceived differently according to gender and strand. Likewise, females who are taking STEM as their strand showed a higher research positivity (m=4.638) and a higher understanding of the relation of research to their course (m=5.274). Also, females who are taking ABM as their strand likely to experience more research anxiety (m=4.597). On the other hand, males who are taking ABM as their strand is experiencing more research difficulty (m=4.161), and males who are taking HUMSS as their strand has more understanding on the relation of research to their lives (m=3.972).

3.1.6 Between Grade Level and Strand

The results of multivariate ANOVA showed that there is no significant difference between the attitude towards research subscales and grade level and strand of SHS students of HCCS, Pillai's Trace= .068, F(3, 221) = .947, p <.001. Thus, univariate test showed that there were significant differences on all ATR Subscales across grade level and strand as shown in Table 9.

Table 9. Grade Level and Strand vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	2.046	3	.682	1.055	.369
Research Anxiety	1.736	3	.579	.754	.521
Course Relation	.808	3	.269	.355	.785
Research Difficulty	4.016	3	1.339	1.711	.166
Life Relation	.422	3	.141	.242	.867

*p < .05 Reject Ho *p > .05 Accept Ho

This means that all the attitude of SHS students towards research was perceived differently according to grade level and strand. Grade 12 STEM students showed higher research positivity (m=4.818) and Grade 11 STEM students showed higher understanding of the relation of research to their course (m=5.427) among others. Likewise, Grade12 HUMSS students greatly understood the relation of research to their own lives. On the other hand, Grade 12 ABM students showed higher research anxiety (m=4.649) and Grade 12 STEM students experienced more difficulty in dealing with research.

3.1.7 Between Gender, Grade Level, and Strand

The results of multivariate ANOVA showed that there is no significant difference between the attitude towards research subscales and grade level and strand of SHS students of HCCS, Pillai's Trace= .159, F(3, 221) = 2.279,

$p < .001$. Thus, univariate test showed that there were significant differences on two (2) ATR Subscales (research difficulty and life relation) across gender, grade level and strand as shown in Table 10.

Table 10. Gender, Grade Level and Strand vs. ATR Subscales

ATR Subscales	Type II Sum of Squares	df	Mean Square	F	Sig.
Research Positivity	4.684	3	1.561	2.416	.068
Research Anxiety	4.948	3	1.649	2.149	.095
Course Relation	5.670	3	1.890	2.491	.061
Research Difficulty	10.052	3	3.351	4.283	.006
Life Relation	7.067	3	2.356	4.058	.008

* $p < .05$ Reject H_0

* $p > .05$ Accept H_0

This means that the attitude of SHS students towards research (research difficulty and life relation) was perceived differently according to gender, grade level and strand. Grade 11 male students who are taking GAS as their strand ($m=4.267$) and Grade 12 female students who are taking GAS ($m=4.278$), both showed a higher research difficulty among others. On the other hand, Grade 11 male students who are taking GAS as their strand ($m=4.150$) and Grade 12 female students who are taking GAS as their strand ($m=3.917$) revealed that they have a higher understanding of research in their lives.

4. Conclusions and Recommendations

The general aim of this study was to identify the attitudes of Holy Child Catholic School senior high school students towards research. According to the findings, students who take research introductory classes in high school have a positive attitude toward research. Students at SHS think that research has a strong relationship to and application in the strand or course they selected. Doubts and pessimism persist as they progress through the course, believing that they will struggle to comprehend basic research principles.

The relationship between and among the five ATR subscales revealed that when research anxiety decreases, research positive increases, and vice versa. This basically indicates that if an SHS student faces low difficulty when conducting research, he or she is more likely to have a good attitude about research. Teachers of research should be aware of this aspect since it will considerably assist them, as Onwuegbuzie (2000) discovered in his study. Students who found their study subjects to be simple had lower levels of anxiety. Their degree of anxiousness is likely to be influenced by their positive self-perception based on the study.

Gender and grade level had little impact on the students' attitudes about research at SHS. In contrast to Shukat and Abiodullah's (2014) finding, it is found out that men had a favorable attitude toward research. This means that both male and female SHS students have the same levels of optimism and pessimism when it comes to research. On the other hand, SHS students' choice of strand has a significant influence on their views about research, which is likely to be linked to the course they will pursue as well as their life.

Because of the research methodology, the relationship between gender, grade level, and strands was taken into account. It was discovered that grade 11 males and females are more likely to accept research subjects and make connections to their selected strand. This means that male students in the lowest grade level are more enthusiastic about taking the course, which has a significant impact on their attitudes toward research, whereas female students in the higher grade level have a clear understanding of what they are learning and how it will help them do research work more easily. When it comes to gender and strand, females who study STEM have a more positive attitude about research and a better understanding of its relationship to their strand. STEM focuses more on allied and medical science, which may explain why SHS students accept research as a part of their life because the strand focuses on scientific exploration and invention. Furthermore, STEM students in Grades 11 and 12 have a good attitude toward research and a better awareness of its relevance to their lives, regardless of grade level or strand. This means that STEM students are more likely to be interested in research since they think scientifically. Everything in science is about addressing problems, and research is one method to achieve it.

Based on the findings, the study suggested that more research into student interest and attitudes toward research is needed. Teachers who are interested in the pedagogical aspect of research should create a simple, life- and course-related research program to foster good attitudes toward research. Senior high school teachers must consider how to make research more appealing to pupils. For SHS students, research should not be a hardship, but rather a problem-solving method that will prepare them for more difficult research work in college. Establishing the importance and relevance of research to SHS students helps them appreciate research learning. Through great research preparation, the findings of this study promise to help senior high school students gain a better grasp of their attitudes about research.

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