
Senior High School Research Competence and Academic Performance: Basis for Sustainability Plan

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Abstract — Generally, the study aimed to assess students' research competencies and performance in practical research subjects as a basis for a sustainability plan for the Division of Mabalacat City for the School Year 2024-2025. The study's respondents were selected from grade 12 students who had taken both Practical Research 1 and 2 subjects. This study employed a quantitative research approach using a descriptive-correlational research design. The study employed statistical tools such as weighted mean, standard deviation, and Pearson Correlation.

Based on the findings, senior high school students were generally “competent” across all stages of the research process, namely: identifying research problem (2.96), reviewing literature (2.95), conceptualizing frameworks (2.90), hypothesizing (2.75), data gathering (3.06), data analysis (2.92), interpreting results (2.97), and reporting findings (2.96). The majority of senior high school students (67.9%) demonstrated a “very satisfactory” performance. There was a strong, significant positive correlation between research competence and students' academic performance, as evidenced by an r -value of 0.773 and a p -value of 0.000. The proposed sustainability plan was crafted to enhance the weakest research competence indicators of the senior high school students.

Keywords: Research Competence, Academic Performance, Sustainability Plan

I. INTRODUCTION

When it comes to transforming human life in the modern world, research is one of the most important intellectual assets anyone can possess. It plays a significant role in the academic world and many other fields. Researchers can enhance their analytical, critical thinking, and communication skills, all of which are becoming increasingly important worldwide. Research is the process of collecting and evaluating information to gain a more in-depth understanding of the phenomenon being examined (Swindoll, 2012).

At the end of the day, research is the foundation of knowledge and the engine that propels innovation across a wide range of fields. Research is the driving force behind every invention. For instance, it has led to the development of treatments for the flu and polio, as well as to the acceleration of technical progress. The ability to communicate with distant relatives directly results from research in technological fields (Gross, 2001).

Since 2016, the Philippines has been addressing the growing demand for education research by integrating pioneers into the senior high school curriculum. This has been done in order to meet the growing demand. Practical Research 1 (Qualitative Research) and Practical Research 2 (Quantitative Research) are two applied courses that were incorporated into the K-12 Curriculum by the Department of Education (2013). These subjects were designed to be taught to students in grades 11 and 12. Through methodical investigation, these courses aim to foster critical thinking and problem-solving skills.

Molina (2019) reported that, based on the curriculum guides mined from the Department of Education (DepEd). There are four research subjects in senior high school: a) Practical Research 1, formerly known as Research in Daily Life 1, is an applied subject that aims to develop students' critical thinking and problem-solving skills through qualitative research. This is an 80-hour subject they offer.

Practical Research 2, formerly Research in Daily Life 2, is an applied subject that aims to develop students' critical thinking and problem-solving skills through quantitative research. This is an 80-hour subject offered during the first semester of Grade 12. The prerequisites for this subject are statistics and probability.

Inquiries, Investigation, and Immersion are applied subjects with Practical Research 1 and 2 as prerequisites. This is an 80-hour subject offered during the second semester of Grade 12. This culminating activity develops students' critical thinking and problem-solving skills through qualitative, quantitative, or mixed methods.

Thus, students are expected to conduct research, write a research paper, and present it orally. d) Research or Capstone Project is an alternative subject of Work Immersion for STEM students per DepEd Order No. 39, 2018.

Students in this subject are expected to identify scientific, technological, or mathematical problems, design and apply appropriate methodologies, formulate hypotheses, and draw conclusions based on their investigations under the guidance of a research adviser.

At the end of the semester, students will prepare a scientific paper to be presented/defended in a forum. This is an 80-hour subject offered during the second semester of Grade 12. Practical research is an applied subject required on all tracks and strands but must be taught in the track context. All students are expected to acquire the learning competencies stipulated in the curriculum guide, but the desired research outputs vary by strand and track. Practical research were written to cultivate learners' necessary research capabilities and skills in different fields.

Asserted by Bangayan-Manera (2020), its goal is to teach learners to become equipped with the basic skills in qualitative and quantitative research and use these skills in making decisions and solving problems they encounter in their everyday lives. With these skills, learners may be able to develop critical thinking and decision-making skills and become 21st-century learners the K to 12 envisions them to be.

Practical research is highly technical. One needs exposure in reading, writing, and statistics to translate competencies into instruction for students. According to Talosa and Maguddayao (2018), writing varies across contexts and cannot be reduced to abstract cognitive or technical abilities.

However, Arellano et al. (2012) noticed that among 963 graduates in a university, only less than half could state a hypothesis, choose an appropriate scale for qualitative variables, identify an

appropriate statistical test, identify a research design, and state elements of the introduction of a research proposal (Arellano et al., 2012).

In addition, being not too competent in doing research may also be reflected in their workplace. For instance, some accountancy faculty from State Universities and Colleges (SUCs) assessed their competencies in doing research as master or competent. At the same time, some are apprentices or are somewhat qualified to conduct research (Mallari & Santiago, 2013).

Research competence is a set of competencies that enables one to master research activities and develop in this field. For example, Lukashenko (2011) explains that research competence is an “integral quality of a person, expressed in the willingness and ability of independent solving of research and creative problems, possession of research technology, recognizing the value of research skills, and readiness to use them in professional activities

Research competencies provide for the availability of abilities: - to see and formulate a problem, determine the purpose of the research work; - understand and justify the relevance, novelty, theoretical and practical significance of research tasks; - put forward and explain hypotheses, plan a solution, using ready and own algorithms and schemes; - independently master new methods of research, acquire knowledge, including through information technologies; - conduct research under a ready or self-developed program; present the results of own work or the known scientific achievements.

Research competence includes a plurality of other, more specific competencies aimed at developing various spheres of activity and personality (axiological, personal growth, general cultural, social and labor, educational and cognitive, communicative, informational) (Khutorskoy, 2013).

Research competence requires a systematic approach in applying the ability to capture the observed phenomena, analyze data, make generalizations and conclusions, refine and correct them with the appearance of new data, changes in scientific approaches, or refinement of the hypothesis (Ismuratova, 2018)

Based on the theoretical analysis, it can be concluded that research competence is a complex of research actions, a person's readiness for effective educational and research activity, and active cognitive training aimed at seeking knowledge to solve the set tasks. (Ismuratova, 2018)

Zeer (2014) identifies the structure of research competence, comprising motivational, cognitive, activity-based, and reflective components. He interprets each of the features of research competence as follows: the motivational element is a set of mental motivation (curiosity, the desire to discover new knowledge), professional basis (the desire to master one's profession and obtain results), and the achievement motivation (the desire to improve one's professional activity, to strive for success). The cognitive component is a set of acquired knowledge necessary for carrying out research activities, including basic knowledge (theoretical and methodological basis) and procedural expertise (research methodology).

Meanwhile, another pressing issue concerning this study is that students are unaccustomed to research. Their appreciation and productivity relative to discipline may be influenced by different factors, such as their attitudes. Several studies emphasized that learners' attitudes towards a particular subject can have severe implications for the learning process and academic performance.

Attitude is a positive or negative effect on a particular subject. The bidimensional definition of attitude includes beliefs about the subject. A comprehensive definition of attitude includes emotions, beliefs, behaviors, and interactions (Zan & Martino, 2007).

Williams and Coles (2013) found that attitude toward research varies significantly with research experience. The attitude towards research refers to a detailed study of thinking, feelings, and the person's behavior in relation to research. According to Papanastasiou (2015), it is essential to identify the attitudes towards research so that a positive attitude can develop among students and their learning can be facilitated in turn.

Patak and Naim (2012) found that students' attitude toward English as a Second Language and English as a Foreign Language toward visiting the library will be very poor. They lack basic research skills, from searching and evaluating literature to paraphrasing and citing sources.

Siemens et al. (2010) conducted a study on medical students to explore their attitudes towards the research. They found that, though most students felt the investigation would benefit their careers, fewer than half would be significantly involved in any research activity during medical school. Even fewer Students realize the need to spend more time on research activities. About one-fourth of the students reported no interest in any such activity.

Sabzwari et al. (2019) conducted a study on junior faculty in the medical profession in Pakistan. They found that though most perceive research as a difficult endeavor, they have a positive attitude toward it.

Papanastasiou (2015) found a negative attitude toward research among undergraduate students. Siemens et al. (2010) found that involvement in research was significantly higher among fourth-year medical students than among second-year medical students. (Zan & Martino, 2017) also found that the performance of postgraduate students in the research will be better than that of undergraduate students.

Further, there are studies to support attitudes toward research from professional perspectives such as nurses (Björkström & Hamrin, 2021) or administrators and faculty (Combs et al., 2007; Tang & Chamberlain, 1997), but very little data around education students, particularly in research methods courses (Murtonen, 2005; Papanastasiou, 2005; Ranis, 2003; Richardson & Onwuegbuzie, 2002).

In addition, Papanastasiou (2015) found that students' negative attitudes and feelings toward research influence the time, effort, and commitment they invest in the course. Hence, it is necessary to determine and understand Grade 12 students' attitudes toward research to enhance research productivity and devise new pedagogies in teaching and conducting research at the senior high school level (Roxas, 2020).

GKS (2015) and Taylor (2017) discussed the essential factors of resisting research daily. The fear of learning, making change, and being criticized are possible factors holding back in research. The fear of knowledge posits reflection on what students do not want to hear or see. Research reveals everything. The fear of change triggers resistance to study since it focuses on solving problems and making an abrupt change to them. Research requires action on what is

concluded and recommended, the fear of being criticized, and the risk of hearing feedback on what is done. Researchers are often afraid to hear negative comments about the results, which sometimes leads them to the negativity of pursuing another study.

In addition, Papanastasiou (2005) also revealed that students' negative attitudes and feelings about research influence the amount of time, effort, and commitment they choose to invest in the course. Hence, it is necessary to determine and understand Grade 12 students' attitudes toward research to enhance research productivity and devise new pedagogies in the teaching and conducting of research at the senior high school level (Roxas, 2020).

The literature gathered implies that attitude towards research greatly affects how people deal with research. Whether a person has undergone a good or bad experience with research indicates when they will still engage in research. Their attitude towards it were neither optimistic nor pessimistic.

The ideas discussed can help the researcher suggest ways of overcoming negative attitudes toward research. It is also possible that the results of this study would greatly help research teachers, especially in senior high school, consider their students' attitudes towards research and address them appropriately. Likewise, the researcher looks forward to better, more positive study results.

Abinan (2021) hypothesized that there is no significant relationship between the level of competence of Senior High School teachers in research and their attitude. She further revealed that respondents' attitudes towards research significantly relate to the teachers' competence. Similarly, a positive attitude towards research is found to be significantly related as reckoned by its correlational coefficient of 0.371 and a probability of 0.003. This finding means that the more positive the teachers' attitude toward research, the higher their research competence.

This implies that having a positive attitude towards research is essential for teaching the subject. Thus, a positive attitude is a contributory factor to performance and competence.

Since research subjects are newly integrated with the basic education curriculum, monitoring the student's proficiency level in different competencies in different research areas is

imperative. Students who fail to be competent in other research competencies will have difficulty conducting research when they go for further studies.

Furthermore, a scholarly literature review indicates a dearth of knowledge in the research literature on students' attitudes toward research.

The researcher identified a gap: earlier studies did not focus solely on the research competence of senior high school students. Although many studies have examined students' research attitudes, very few have examined the relationship between research competencies and attitudes among senior high school students. Likewise, the relationship between research competence and academic performance in practical research subjects remains unexplored. Given these contentions, the researcher is determined to ascertain the relationship of the abovementioned variables in the Division of Mabalacat City for the School Year 2024-2025.

Conceptual Framework

This research adopted the Independent-Dependent (IV-DV) model to provide a visual representation for the study. An independent variable (IV) was a variable that a researcher manipulated to investigate whether it affected another variable. This other variable, which was measured and predicted to be dependent on the IV, is therefore called the dependent variable (DV) (Edexcel, 2021).

In this study, the independent variable was the research competencies of senior high school students, assessed using a research instrument. It included dimensions such as Identifying Research problems, Searching for Literature and Studies, Conceptualizing Framework, Hypothesizing, Data Gathering, Analyzing Data, Interpreting Results, and Reporting Results and Findings.

Meanwhile, the study's dependent variable included the student's academic performance in Practical Research Subjects.

The arrowheads represent the relationship between research competence and academic performance. Figure 1 below depicts the study's paradigm.

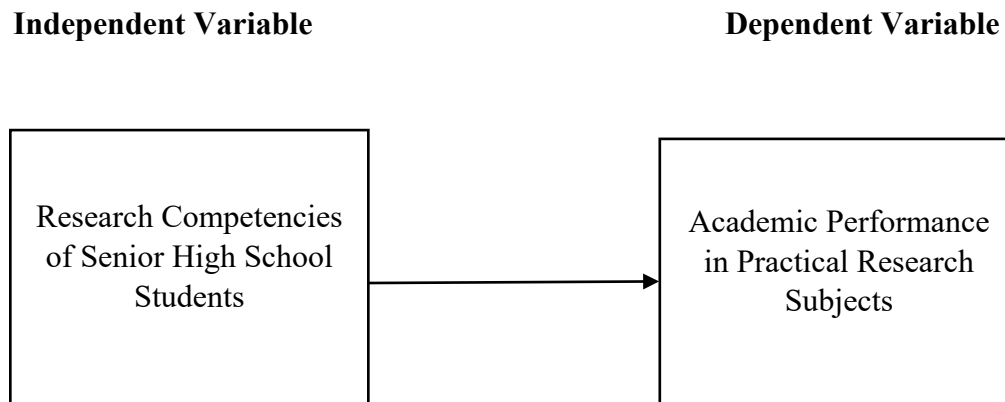


FIGURE 1
PARADIGM OF THE STUDY

Statement of the Problem

Generally, the study aimed to assess students' research competencies and performance in practical research subjects as a basis for an action plan for the Division of Mabalacat City for the School Year 2024-2025.

Specifically, it sought to answer the following questions:

1. How may the level of practical research competencies of the respondents be described in terms of the following aspects:
 - 1.1 Identifying the Research Problem;
 - 1.2 Searching for Literature and Studies;
 - 1.3 Conceptualizing Framework;

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- 1.4 Hypothesizing;
 - 1.5 Data gathering;
 - 1.6 Analyzing data;
 - 1.7 Interpreting results and findings; and
 - 1.8 Reporting results and findings?
2. How may the respondents' academic performance in practical research subjects be described?
 3. Is there a significant relationship between the level of research competence and the respondents' academic performance?
 4. What sustainability plan can be proposed based on the findings?

Hypothesis

This study was anchored on the alternative hypothesis that there is a significant relationship between the respondents' level of research competence and academic performance.

Significance of the Study

The researcher believes that the success of this endeavor would be of great help to the following individuals:

School Heads. The results of this study may provide relevant feedback relative to the research competence and attitude of the students in the formulation of learning action cell sessions, emphasizing the research management and training program for teachers to facilitate the research subjects among the students effectively.

Teachers. The findings of this study will provide insights for the practical research teachers in the Senior High School to better understand the students' research performance and attitudes to provide appropriate sustainability and remedies concerning research subjects.

Students. The results of this investigation would allow the students to express their thoughts relative to research subjects, yield empirical evidence to tailor the instruction and activities regarding research subjects.

Other Researchers. The findings of this study will provide information to other researchers who opt to conduct similar studies to provide data for policy reviews, especially on enriching the curriculum to make it more relevant and realistic for the students.

Scope and Delimitation

Generally, the study intended to assess the research competencies and students' performance in practical research subjects as a basis for a sustainability plan in the Division of Mabalacat City for the School Year 2024-2025.

The study was conducted in the Division of Mabalacat City, which served as the research locale. There are six (6) Public Senior High Schools within the Division. The study's respondents were selected Grade 12 students who had taken both practical research 1 and 2 subjects.

Furthermore, the study was delimited to the following specific objective: the respondents' level of research competence in terms of the following aspects: identifying the research problem, searching for literature and studies, conceptualizing a framework, hypothesizing, data gathering, analyzing data, interpreting results and findings, and reporting results and findings. The academic performance of the respondents in Practical Research subjects and the significant relationship between the level of research competence and their academic performance. Finally, the output of this study would be a proposed Action Plan for teaching practical research subjects.

Definition of Terms

The researcher used several concepts that were highly significant to this study. These terms were defined conceptually and operationally to help the reader understand the study.

Research Competence. This is an “integral quality of a person, expressed in the willingness and ability to solve research and creative problems independently, possess research technology, recognize the value of research skills and readiness to use them in professional activities” (Lukashenko, 2011). These competencies enable one to master the research activity and develop successfully in this direction.

Research Attitude. This includes emotions, beliefs, behaviors, and interactions (Zan & Martino, 2007). This study pertains to beliefs, whether positive or negative, and attitudes of the Senior High School Students toward research subjects.

Academic Performance. This is the measurement of student achievement across various academic subjects. This study refers to the student performance in their practical research subjects.

Practical Research Subjects. These subjects are one of the specialized subjects in the K to 12 Senior High School Curriculum. These include Practical Research 1 or Qualitative Research, and Practical Research 2 or Quantitative Research.

Senior High School Students. This refers to Grades 11 or 12 Students enrolled in the Senior High School Curriculum. In this study, Grade 12 Students refer to the study’s respondents.

Research Conceptualization. It is the first stage in the research process. Students will select a research topic, describe the topic’s background, formulate objectives or research questions, cite the beneficiaries of the study, set the scope, select literature, construct the theoretical and conceptual framework, and define variables.

Formulation of Research Method and Design. It is the second stage in the research process. Students will formulate research methods and designs, select study sites, identify populations, choose appropriate sampling methods, and construct valid and reliable research

instruments. Also, propose procedures for data collection, choose appropriate statistical tools, and consider research ethics.

Data Gathering, Processing, and Analysis. It is the third stage in the research process. Students will employ a data-gathering plan, present data through tables or graphs, use statistical tools to analyze the data, interpret data, compose research findings, draw conclusions, and provide recommendations.

II. METHODOLOGY

This chapter presents the appropriate research design, subject, instruments, data gathering procedure, and statistical data treatment.

Research Design

This study employed a quantitative research approach. Quantitative research is the process of collecting and analyzing numerical data. It can find patterns and averages, predict causal relationships in tests, and generalize results to broader populations (Bhandari, 2021).

A descriptive-correlational research design was used to collect data. Descriptive research is a type of research used to describe a population's characteristics. It contains data used to answer a wide range of what, when, and how questions about a particular person or group (Research et al.).

This study described the research competence of senior high school students in practical research subjects and their research attitudes. Meanwhile, the study was correlational, as it sought to examine the relationship between research competence and academic performance. Likewise, research competence and attitude were established.

Respondents

The study's respondents comprised the selected Grade 12 Senior High School Students among the six (6) Public Senior High Schools within the Schools Division of Mabalacat City. The sample size was determined using the Raosoft calculator with a 5% margin of error. A total of 301 samples were included in the data collection. After the sample size had been established, the selection of the respondents was accomplished thereafter.

The respondents of the study were carefully chosen using a stratified sampling technique. Stratified random sampling is a method of sampling that involves dividing a population into smaller subgroups, known as strata. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics, such as income or educational attainment (Hayes, 2021). This was determined based on the number of populations of grade 12 students in each participating school. Table 1 presents the distribution of respondents by school.

TABLE 1
FREQUENCY DISTRIBUTION OF RESPONDENTS

Senior High Schools	Population	Sample size
School 1	363	80
School 2	48	11
School 3	370	81
School 4	212	46
School 5	174	38
School 6	207	45
Total	1374	301

Instrument

The researcher used two (2) survey questionnaires to measure the significant variables in this study. This instrument was composed of two (2) parts:

The first part of the questionnaire was dedicated to assessing the research competence of senior high school students, based on Molina's (2019) work on the Development of an Instrument to Measure Practical Research Competencies in Senior High School.

The Practical Research Competencies Inventory Checklist has 94 items. Research conceptualization comprises 45 items, formulation of the research method and design comprises 28 items, and data gathering, processing, and analysis comprise 21 items.

In terms of its validity, it obtained an Aiken Value of 0.89. Thus, it implied that the developed instrument is very valid. The computed Cronbach's alpha value of the developed tool is 0.96, which means an excellent internal consistency in the instrument. Therefore, the tool was valid and reliable.

The second part of the questionnaire was designed to assess students' research attitude by adapting Walker's (2010) Confirmatory Factor Analysis of the Attitudes Toward Research Scale (ATR). The ATR's subscales were $> .80$; research use ($\alpha = .88$), negative attributes of research ($\alpha = .81$), and positive attributes of research ($\alpha = .82$). Further, the score reliability for the subscales signified high internal consistency. The items comprising each latent factor accounted for a large percentage of the variance, ranging from 0.66 to 0.77. Hence, the instrument can be justified as valid and reliable.

Data Collection

The researcher prepared a formal letter of permission addressed to the Office of the Schools' Division Superintendent of the Division of Mabalacat City, requesting authorization to conduct the study. Upon receiving official approval, the researcher closely coordinated with the senior high school heads to outline and discuss the planned data collection activities.

The selected sample group completed the survey questionnaires via Google Forms, in compliance with the latest DepEd guidelines for conducting remote data gathering. To ensure clarity and comprehension, the researcher provided detailed explanations for each questionnaire item, facilitating the respondents' understanding of the content. The questionnaires were collected once all respondents have completed them.

The responses were carefully tallied, recorded, tabulated, analyzed, and interpreted using appropriate statistical tools. The researcher will personally compile the data and then present it to a statistician for thorough analysis and interpretation.

Ethical Considerations

The researcher adhered to ethical norms throughout the study. Initially, the respondents' consent was elicited to respect their decision to participate in the study. Additionally, the researcher will ensure the respondent's anonymity and maintain the confidentiality of their responses.

Finally, the data were treated with complete objectivity, demonstrating professional respect for the data gathered from the respondents.

Statistical Treatment

The researcher employed the following statistical tools to analyze and interpret data.

1. Weighted Mean. This was calculated to assess the research competencies of senior high school students. Consistently, the following scales were used to describe their competence.

Scale	Descriptive Equivalent	Interpretation
3.50-4.00	Very Competent	Very High
2.50-3.49	Competent	High
1.50-2.49	Somewhat Competent	Moderate
1.00-1.49	Not Competent	Low

2. Arithmetic Mean: This tool was utilized to assess the students' academic performance based on practical research subjects. The following scales were used for interpretation.

Grading Scale	Descriptor
90-100	Outstanding
85-89	Very satisfactory
80-84	Satisfactory
75-79	Fairly satisfactory
Below 75	Did not meet expectation

3. Pearson r. This tool was employed to ascertain the relationship between research competence and academic performance. Likewise, the relationship between research competence and attitude was determined.

$$r = \frac{\sum (x_i - \bar{x}) (y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

III. RESULTS AND DISCUSSION

This chapter presents the analysis and interpretation of data obtained from the questionnaires, aiming to answer the specific questions raised in Chapter 1.

1. Descriptions of the Level of Practical Research Competencies of the Respondents

1.1. Identifying the Research Problem

Table 2 describes students' competence level in identifying a research problem. Based on the data, the respondents rated "competent" with a weighted mean score of 2.96, indicating that they possess an adequate skill level in identifying and framing research questions. Moreover, the indicator "writing specific problems for the research received the highest weighted mean score of 3.17, which suggests that this group can translate research concerns into concrete and specific answers. On the other hand, the indicator "assessing schools' data" had the lowest weighted mean score of 2.77, indicating that these students showed weakness in data analysis.

TABLE 2
IDENTIFYING RESEARCH PROBLEM

Identifying Research Problem Indicators...	Mean	SD	Descriptive Rating
1. assessing schools' data	2.77	0.81	Competent
2. determining problem	3.01	0.76	Competent
3. identifying root cause of the existence of problem	3.00	0.75	Competent
4. determining variables	2.83	0.83	Competent
5. writing general problem of the research	2.95	0.94	Competent
6. writing specific problems for the research	3.17	0.95	Competent
Overall Mean	2.96	0.66	Competent

1.2. Searching for Literature and Studies

Table 3 displays the respondents' competence level in terms of searching for literature and studies. The students rated "competent" in this area, with a grand mean score of 2.95. This indicates that the respondents generally possessed sufficient skills in identifying and utilizing relevant literature to support their investigation. Moreover, the indicator "searching for sources of literature" received the highest weighted mean score of 3.09, justifying that they are good at identifying and searching references from books and other online sources. This also reflects familiarity with basic literature search strategies. Meanwhile, the indicator with the lowest weighted mean score was "dissecting concepts and ideas from literature and studies," with a score of 2.84. This finding suggests that the students have difficulties analyzing theoretical concepts deeply, as well as in presenting key ideas from scholarly written works.

TABLE 3
SEARCHING FOR LITERATURE AND STUDIES

Searching for Literature and Studies Indicators...	Mean	SD	Descriptive Rating
1. searching for a source of literature and studies	3.09	0.84	Competent
2. dissecting concepts and ideas from literature and studies	2.84	0.87	Competent
3. comparing and contrasting findings of literature and studies	2.93	0.91	Competent
4. synthesizing findings of literature and studies	2.96	0.88	Competent
5. writing literature using the APA format	2.91	0.96	Competent
Overall Mean	2.95	0.72	Competent

1.3. Conceptualizing Framework

Table 4 shows the respondents' competence levels in conceptualizing a research framework. The students rated "competent" with an overall mean score of 2.90, which suggests that they acquire adequate skills in developing and explaining conceptual frameworks to support their research studies. In addition, the indicator "searching for theory/ies related to the research" gained the highest weighted mean score of 3.00. This suggests that the respondents can identify related theoretical underpinnings as the basis for their studies. Conversely, the indicator "diagramming the scheme or flow of the research" recorded the lowest mean score of 2.75. This suggests that the respondents encounter difficulties in visually presenting relationships among variables and processes within the framework.

TABLE 4
CONCEPTUALIZING FRAMEWORK

Conceptualizing Framework Indicators...	Mean	SD	Descriptive Rating
1. searching for theory/ies related to the research	3.00	0.89	Competent
2. connecting the theory/ies to the research being conducted	2.92	0.83	Competent
3. conceptualizing a comprehensive framework	2.92	0.88	Competent
4. diagramming the scheme of research or flow of research	2.75	0.90	Competent
5. providing a discussion of the conceptual Framework	2.91	0.90	Competent
Overall Mean	2.90	0.76	Competent

1.4. Hypothesizing

Table 5 shows the respondents' competence levels in terms of hypothesizing. Based on the table, the students rated "competent," with a grand mean of 2.75, indicating they possessed an acceptable level of ability in formulating research hypotheses. Moreover, among the indicators, "matching the hypothesis with research questions" achieved the highest weighted mean score of 2.89, indicating that students have a basic understanding of the logical connections between research questions and hypotheses. However, indicators "writing null hypotheses" and "writing alternative hypotheses" registered the lowest weighted mean scores of 2.71 and 2.65, respectively. This indicates that respondents struggle to construct statistically testable hypotheses accurately.

TABLE 5
HYPOTHESIZING

Hypothesizing Indicators...	Mean	SD	Descriptive Rating
1. matching the hypothesis with the research questions	2.89	0.94	Competent
2. writing null hypothesis	2.71	0.93	Competent
3. writing alternative hypothesis	2.65	0.92	Competent
Overall Mean	2.75	0.80	Competent

1.5. Data gathering

Table 6 reveals the respondents' competence level in data gathering. Clearly, the students rated "competent" in data gathering, as evidenced by the overall mean score of 3.06. This implies that students generally demonstrate adequate and functional skills in selecting and implementing

appropriate data collection techniques for research purposes. Additionally, among the indicators, “surveying” and “interviewing” obtained the greatest weighted mean scores of 3.23 and 3.16, respectively. This suggests that the students are more confident and experienced in terms of strategies for data collection, particularly those frequently employed in educational research. On the contrary, indicators “observing the phenomenon and discussing the method to be used” received slightly lower weighted mean scores of 3.00 and 2.88, respectively. This suggests that they experience minor challenges in articulating methodological processes and documenting observations systematically.

TABLE 6
DATA GATHERING

Data Gathering Indicators...	Mean	SD	Descriptive Rating
1. identifying the appropriate research method	3.07	0.92	Competent
2. discussing the method to be used	2.88	0.90	Competent
3. crafting a validated instrument	3.08	0.78	Competent
4. surveying	3.23	0.92	Competent
5. interviewing	3.16	0.96	Competent
6. observing the phenomenon	3.00	0.89	Competent
7. text analyzing	3.04	0.98	Competent
Overall Mean	3.06	0.69	Competent

1.6. Analyzing data

Table 7 presents the respondents' competence level in analyzing data. Notably, the students rated "competent" in analyzing data as revealed by the overall mean score of 2.92, implying that these students generally exhibit sufficient skills in organizing and analyzing research data. Also, among the indicators, "organizing logical arrangement of data received the greatest mean score of 2.92, which means that they are capable of arranging the data systematically to facilitate analysis and interpretation. On the other hand, indicators "determining appropriate statistical treatment and transcribing" received slightly lower mean scores of 2.89 and 2.87, respectively. The results imply that students experience difficulty in selecting appropriate and suitable statistical tools and converting qualitative data into analyzable formats

TABLE 7
ANALYZING DATA

Analyzing Data Indicators...	Mean	SD	Descriptive Rating
1. organizing logical arrangement of data	2.97	0.85	Competent
2. tallying	2.95	0.90	Competent
3. managing data	2.92	0.88	Competent
4. transcribing	2.87	0.95	Competent
5. determining appropriate statistical treatment	2.89	1.02	Competent
Overall Mean	2.92	0.74	Competent

1. 7. Interpreting results and findings

Table 8 presents the respondents' competence level in interpreting research results. As reflected in the table, students rated themselves as "competent" in interpreting research results, as supported by a grand mean score of 2.97. This implies that students possess the necessary skills to interpret and explain both quantitative and qualitative research findings. Moreover, among the indicators, "getting information from the results of the statistics" had the highest mean score of 3.12, indicating that respondents can derive meaningful insights from statistical analyses. Similarly, this highlights their competence in comprehending numerical values and their implications for the research questions. Contrarily, indicators "providing in-depth analysis of results and presentation of thematic analysis, obtained the least weighted mean scores of 2.91 and 2.88, respectively. This signifies that students struggle to analyze and interpret in-depth discussions and qualitative synthesis.

TABLE 8
INTERPRETING RESULTS

Interpreting Results Indicators...	Mean	SD	Descriptive Rating
1. getting information from the results of the statistics	3.12	0.82	Competent
2. writing description of tables, graphs, and other figures	2.96	0.88	Competent
3. accepting and rejecting hypothesis	2.96	0.88	Competent
4. presentation of thematic analysis	2.88	0.85	Competent
5. providing in depth-analysis of results	2.91	0.84	Competent
Overall Mean	2.97	0.68	Competent

1.8. Reporting results and findings

Table 9 shows the respondents' competence level in reporting research results and findings. Based on the table, students rated themselves as "competent" in reporting research results and findings, as evidenced by an overall mean score of 2.96. This indicates that the students demonstrate adequate skills in presenting, analyzing, and interpreting the data obtained from the data gathering tools in a clear and acceptable academic manner. In addition, among the indicators, "providing comprehensive and realistic recommendations received the highest mean score of 3.05. This means that the students can associate research findings with practical applications and relevant research investigations. On the other hand, the indicator "writing a summary" recorded the lowest mean score of 2.87, implying that the respondents are having challenges in synthesizing the key findings concisely

TABLE 9
REPORTING RESULTS AND FINDINGS

Reporting Results and Findings Indicators...	Mean	SD	Descriptive Rating
1. observing APA format	2.93	0.95	Competent
2. writing of interpretation grammatically correct	2.91	0.89	Competent
3. supporting the findings with literature	3.03	0.88	Competent
4. observing coherence of results and findings	3.00	0.85	Competent
5. writing a summary	2.87	0.88	Competent
6. deriving conclusions from the results and findings	2.95	0.91	Competent
7. providing comprehensive and realistic recommendations	3.05	0.96	Competent
Overall Mean	2.96	0.72	Competent

2. Respondents' Academic Performance in Practical Research Subjects

Table 10 shows the respondents' academic performance in practical research subjects. Based on the table, the majority of them, or 66.7% comprised "very satisfactory ratings. This was followed by some, or 29.6% which were categorized as outstanding, and only 3.7% of them rated "satisfactory" performance. The findings indicate that most learners have exceeded the expected learning standards in practical research subjects. The results somehow align with the recent evidence supporting the idea that senior high school students can achieve the required research learning outcomes. Although some gaps may still need to be addressed, such as the conceptualization of research and the application of methodology.

TABLE 10
STUDENTS' ACADEMIC PERFORMANCE IN PRACTICAL RESEARCH SUBJECTS

Descriptive Rating	Frequency	Percent
	(f)	(%)
Outstanding	89	29.6%
Very Satisfactory	201	66.7%
Satisfactory	11	3.7%
N	301	100%

3. Relationship between the Level of Research Competence and the Respondents' Academic Performance

Table 11 shows the correlation between research competence level and students' academic performance in practical research subjects. Based on the table, the computed r-value was 0.773 with a p-value of 0.000. This suggests a strong positive correlation between research competence

levels and academic performance. This means that as learners' research competence improves, their academic performance tends to improve accordingly. Furthermore, a closer look at the data reveals that research competence is a strong determinant of students' academic performance. That is, the strong, significant relationship between the two variables underscores the need for a sustained sustainability to strengthen learners' research competence.

TABLE 11
RELATIONSHIP BETWEEN THE LEVEL OF RESEARCH COMPETENCE AND THE RESPONDENTS' ACADEMIC PERFORMANCE

Variables		r-value	p-value	Remarks	Decision
Level of Research Competence and the Respondents' Academic Performance		0.773	0.000**	Significant	Reject Ho

4. Proposed Sustainability Plan

I. Rationale

The proposed sustainability plan is designed to address the weakest research competence indicators by providing a structured, skill-based activity to further enhance learners' research skills and sustain academic success.

II. Objectives

To enhance the research competence of senior high school students in terms of ability to analyze data for problem identification, critically examine and synthesize literature, construct accurate hypotheses, justify research methodologies, and analyze and interpret data effectively.

III. Work Plan

Research Skill Area	Least Weighted Mean Indicator	Sustainability Activity	Persons Involved	Time Frame	Resources Needed	Expected Output
Identifying the Research Problem	Assessing schools' data (WM = 2.77)	Data-to-Problem Analysis Workshop	Practical Research Teachers, Students	1 week	School data sets, worksheets, ICT tools	Data-based research problem statements
Searching for Literature and Studies	Dissecting concepts and ideas (WM = 2.84)	Critical Reading and Concept Mapping Sessions	Teachers, Students	1 week	Research articles, concept maps	Annotated literature and concept maps
Conceptualizing Framework	Diagramming research framework (WM = 2.75)	Conceptual Framework Visualization Workshop	Teachers, Students	1 week	Sample frameworks, flowchart tools	Completed conceptual framework diagrams
Hypothesizing	Writing alternative hypothesis	Hypothesis Writing and	Teachers, Students	1 week	Hypotheses	Correctly written null and

	(WM = 2.65)	Alignment Clinic			templates, examples	alternative hypotheses
Data Gathering	Discussing method to be used (WM = 2.88)	Research Method Justification Workshop	Teachers, Students	1 week	Sample methodology sections, rubrics	Improved methodology write-ups
Analyzing Data	Transcribing (WM = 2.87)	Qualitative Data Transcription Training	Teachers, Students	1 week	Audio samples, transcription guides	Accurate transcriptions and coded data
Interpreting Results and Findings	Presentation of thematic analysis (WM = 2.88)	Thematic Analysis Workshop	Teachers, Students	1 week	Sample qualitative data, matrices	Proper thematic analysis outputs
Reporting Results and Findings	Writing a summary (WM = 2.87)	Research Summary and Synthesis Writing Clinic	Teachers, Students	1 week	Sample summaries, writing guides	Concise research summaries

IV. Monitoring and Evaluation

Activity	Research Skill Focus	Monitoring Tools	Personnel Involved	Time Frame
Data-to-Problem Analysis Workshop	Assessing schools' data	Pre-test, student worksheets, observation checklist	Practical Research Teacher, Research Coordinator	Week 1
Critical Reading & Concept Mapping Sessions	Dissecting concepts from literature	Concept map rubric, annotated articles	Practical Research Teacher	Week 2
Framework Visualization Workshop	Diagramming conceptual framework	Framework checklist, output review	Teacher, Subject Head	Week 3
Hypothesis Writing Clinic	Writing null and alternative hypotheses	Hypothesis rubric, draft checking	Teacher	Week 4
Research Method Justification Workshop	Discussing research methods	Methodology rubric, reflection logs	Teacher	Week 5

Transcription & Coding Training	Transcribing qualitative data	Transcription checklist, sample transcripts	Teacher	Week 6
Thematic Analysis Workshop	Presentation of thematic analysis	Thematic matrix, rubric	Teacher	Week 7
Summary Writing Clinic	Writing research summary	Writing rubric, peer review sheets	Teacher	Week 8

IV. CONCLUSIONS AND RECOMMENDATIONS

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

Summary of Findings

Based on the analysis and interpretation of data, the following were the summary of findings:

1. Senior high school students were generally “competent” across all stages of the research process, namely: identifying research problem (2.96), reviewing literature (2.95), conceptualizing frameworks (2.90), hypothesizing (2.75), data gathering (3.06), data analysis (2.92), interpreting results (2.97), and reporting findings (2.96).

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2. The majority of the senior high school students, or 67.9% demonstrated “very satisfactory” performance.
 3. There was a strong and significant positive correlation between the research competence and students’ academic performance, as supported by the r-value of 0.773 and a p-value of 0.000.
 4. The proposed sustainability plan was crafted to enhance the weakest research competence indicators of the senior high school students.

Conclusions

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

1. The respondents possessed adequate and functional research competence levels across all phases of the research process, though they need to put extra effort into their skills in terms of data-driven problem identification and synthesizing qualitative data.
2. Most learners have achieved the desired learning standards in the practical research subject, implying that instructional practices and learning support are effective in developing research skills among learners.
3. Research competence is a key predictor of academic performance of the learners, which means that students who demonstrate higher research competence tend to achieve better academic performance.
4. The proposed sustainability plan provides specific research-related activities to support students’ enhancement of their least mastered research competence.

Recommendations

Given the preceding conclusions, the following recommendations are offered:

1. Research teachers are advised to put a premium on instructional strategies that would enhance students' research competence around hypothesis formulation, statistical analysis, and synthesis by providing varied sources of information.
2. School heads may initiate and lead research-focused sustainability programs, such as peer tutoring and enrichment sessions, to assist students who still need support, especially those at the satisfactory level.
3. Subject group experts may lead the integration of progressive and scaffolding of research skills development among senior high school teachers to effectively reinforce the strong association between students' research competence and academic success.
4. The proposed sustainability plan can be implemented to ensure its effectiveness, relevance, and sustainability.
5. Future researchers are encouraged to conduct further studies by exploring other factors that significantly affect students' performance in research focusing on qualitative research.

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