

Research Knowledge, Skills, Attitudes, and Challenges Encountered by Senior High School Student Researchers

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ABSTRACT:

This study investigated the research knowledge, skills, attitudes, and challenges encountered by Senior High School (SHS) students in Catanduanes. An explanatory sequential mixed method research design was adopted in this study. The researchers used researcher-made achievement test, survey questionnaires and interview guides to collect data in this study. Achievement test and survey questionnaire were administered first, before the conduct of interview with selected participants. Results of analysis revealed complex and contradictory findings. Students generally reported high levels of research skills (Method and Data Analysis, $M=3.58$; Writing and Reporting Research Results, $M=3.52$; and Problem Conceptualization, $M=3.62$) and positive attitudes towards research (Research Usefulness, $M=3.65$; Research Anxiety, $M=3.52$; Positive Disposition, $M=3.45$; Relevance, $M=3.26$; and Difficulty, $M=3.21$). Contrary to the reported high levels of research skills and attitudes, their demonstrated knowledge of research fundamentals was minimal ($MPS=39.50\%$), significantly lower than average or moderate levels reported in other studies. These disconnects between perceived ability and actual knowledge suggest a potential overestimation of research competence, possibly due to a lack of deep understanding of the research process. Further inconsistencies emerged regarding the challenges students face. Despite reporting strong skills in research methods and data analysis, thematic analysis revealed significant difficulties in these very areas, specifically in data collection and analysis, resource constraints, time management, finding and using information, and group dynamics. These multifaceted challenges underscore the need for a more comprehensive approach to research education.

Keywords: senior high school, research, knowledge, attitude, challenges

INTRODUCTION

The UN Sustainable Development Goal 4 (SDG 4) focused on Quality Education and aimed to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” by 2030. To support SDG 4, the Enhanced Basic Education Program or K to 12 Curriculum in the Philippines which included the addition of two more years of study in secondary education known as the senior high school (SHS) education (RA 10533, 2013) was implemented.

According to DepEd (2016), SHS was a crucial part of the K to 12 Program. One of its aims was to produce graduates equipped with 21st-century skills, including learning and innovation skills, critical thinking/reasoning skills, creativity/creative thinking skills, and

problem-solving skills (Vivekenandan, 2019). With the implementation of the K to 12, SHS education was divided into four tracks, namely: Academic, Arts and Design, Sports, and Technical-Vocational-Livelihood tracks. Each track had its different strands (DepEd, 2019).

Research played a crucial role in the development of society; it had to be integrated into the school curriculum in every possible way. In the Philippine basic education environment, the Department of Education (DepEd) promoted, instilled, and sustained a research culture among the country's elementary and secondary schools (DepEd, 2017). Authors provided different definitions of research according to the field of their study. According to Girardin (2023), there was no all-encompassing definition of research because it was such a diverse way to discover new things. However, there was one goal in doing research, it was to inform, and it was based on data that had been collected and examined (Skidmore, 2023).

To achieve 21st-century skills, research subjects were offered in SHS education. According to DepEd Order No. 21 (2019), there were three common research subjects for all SHS tracks and strands. These included Practical Research 1 and 2, and Inquiries, Investigations, and Immersions (3Is). Practical Research 1 dealt with the development of critical thinking and problem-solving skills through qualitative research. On the other hand, quantitative research was Practical Research 2. Subject 3Is required the learners to demonstrate competencies acquired in an integrative, scientific, or creative manner in his or her chosen area of specialization.

Training the investigative or research skills of students encouraged not just in academic aspect but also equipped students with tools to solve real-world issues in a variety of situations, as well as flexibility, critical thinking, decision making, motivation, and technical application of theoretical knowledge (Fernández, 2006). In the case of the United States, the Common Core State Standards (CCSS) required students to develop research skills. Students' capacity to obtain, comprehend, evaluate, synthesize, and summarize material improved as they worked on research assignments (CCCS, 2013).

Undergraduate and graduate students had higher levels of research literacy and participation in research (Estacio et al., 2018) however the case was different for senior high school students. Only a few researchers investigated the knowledge, literacy or understanding of SHS students about research and findings were contradictory. Some researchers like Kyaw Soe (2013) and Estacio et al. (2018) found that students' knowledge about research was only at an average or moderate level. There were reports like from Assar et al. (2022) where students were found to have a lack of understanding of research. On the other hand, a study conducted by Kaur (2016) reported that students demonstrated a positive understanding of research. This was similar to the findings of Ciocon (2018) which reported that senior high school students demonstrated competency and understanding in doing research.

In a study conducted by Estacio et al. (2018) about research skills of students it was found that, on average, SHS students were capable or had skills of doing research. Furthermore, results revealed that students believed they were better competent at conducting qualitative research than quantitative research. In a study conducted by Bocar (2011), the research skills that were considered difficult on the part of the students were administration of questionnaire and retrieval of the same. Abbaro and Mariño (2016) found that the students were moderately

capable when it came to skills in writing and reporting research results, but they were less capable in applying the American Psychological Association (APA) referencing style.

Knowledge and skills were not the only requirement in conducting research. Students' attitude towards research was also a need. Attitude was described as students' views and evaluation, whether positive or negative, towards doing research (Fishbein and Ajzen, 1980; Vargas-Sanchez et al., 2016). The attitude of students toward research was considered one of the important factors that affected the completion of a research project (Muthuswamy et al., 2017). According to Asar et al. (2022), students' favorable attitudes toward research needed to be enhanced, as well as their sense of its relevance and utility, as this could serve as a beginning point for considering innovative techniques for involving students in research.

In separate studies conducted by Roxas (2018) and Bangalan and Hipona (2020), it was revealed that SHS students had a positive attitude towards doing research as students perceived its usefulness and relevance to daily life. However, in the study of Hussain et al. (2016), although students had a positive attitude towards doing research, students viewed research as irrelevant in their future lives. According to Serrano (2022), students' research skill was significantly improved when the students' attitude towards study was enhanced.

Having the right knowledge, skills, and attitude in conducting research was an advantage for students. They did not experience too much trouble in doing research; however, those procedures in research were considered a difficult task for several students (Passanisi & Peters, 2019). There was no doubt that research was hard (Dasgupta, 2017). A number of researchers investigated challenges or problems encountered by students in conducting research.

According to Landicho (2020), the primary challenges SHS students faced in doing research were lack of time and lack of prior knowledge. Bangalan and Hipona (2020) revealed that challenges included limited time, lack of motivation, lack of research skills, and inadequate financial support. For Leonares (2019), there were six challenges: (1) Lack of basic research background from Junior High School, (2) Formulating a Topic, (3) Dealing with a research team, (4) Insufficiency of Resources, (5) Data Analysis and Treatment, and (6) Staying motivated. According to the findings of Escalona and Fiscal (2020), the most challenging aspects included looking for relevant material, cooperating, the teacher's timetable, and inadequate time management.

Although research had been included in the basic education curriculum, teachers who taught research subjects in senior high schools did not expect students to produce a research problem right then and there. They had to assess their students' research ability before teaching research subjects. Previous studies demonstrated the need to measure students' research abilities before they began conducting research (Lacson & Dejos, 2022).

The knowledge, skills, attitudes, and challenges of SHS students in conducting research were important variables to determine the needs of SHS students about research. Findings of this study were intended to be used to develop a research knowledge, skill, and attitude upscaling program for SHS students to bridge the current needs of SHS students in doing research.

METHODOLOGY

The present study adopted a mixed-method research design, in particular, an explanatory sequential mixed method research design. Creswell and Plano Clark (2018) defined the design as the gathering and analysis of quantitative data, followed by that of qualitative data. The design is mostly used to clarify or broaden quantitative data.

The participants of this study were 329 senior high school students in public secondary schools in Catanduanes. Of the 329 participants, 139 (42%) were male while 190 (58%) were female students. Only Grade 12 students in the K to 12 Curriculum were included as research participants. Typically, for Grade 11 students, the research subject is offered at the second semester of each school year while for Grade 12 students, research subjects are offered as early as the first semester. The researchers may only gain meaningful information from Grade 12 students since they have already finished the qualitative and quantitative research subjects.

Achievement test about research was prepared by the researchers. The initial achievement test consisted of 75 items. This achievement test undergone content validity and reliability test to determine its validity and reliability. After establishing the validity of achievement test, an item analysis was conducted. The achievement test was administered to thirty students who are not participants of the study but have the same characteristics as the participants. In determining the reliability of the achievement test, the Cronbach's alpha was reported.

A Survey Questionnaire was used to determine the attitude and skills of students in conducting research. The Research Skills Scale (RSS) developed by Lacson and Dejos (2022) was used to gather the skills in doing research of the SHS students. To gather the attitude of students towards research, the Attitude towards Research Scale (ATRS) developed by Bangalan and Hipona (2020) was used. Both the RSS and ATRS were retested for its reliability to 100 SHS students who have the same characteristics as the participants but are not included in the pool of participants.

The data about challenges of students in conducting research was gathered through interview. An interview guide was prepared for this matter. In developing the interview guide the researchers were guided by the survey on challenges encountered by students as proposed by Bangalan and Hipona (2020). Statements presented in this survey were reviewed to form as basis for developing the research instruments.

RESULTS**Level of Knowledge of SHS Student-Researchers**

The knowledge of SHS students in doing research has been defined in this study as the conceptual understanding of SHS students about the research process and conducting research which involves research proposal writing, preparation and validation of research instruments, ethics in research, data gathering procedure, analysis, interpretation, discussion, providing conclusions and recommendations, and citing references.

A 30-item researcher-made test was used to determine the level of knowledge of SHS students in doing research. A total of 329 SHS students took the test. Table 1 presents the results of the test administered.

Table 1. Level of Knowledge of SHS Student-Researchers

Mean Score	Total Items	MPS	Description
11.85	30	39.5	Minimal Knowledge

Of the 30-item test, the SHS students obtained a mean score of 11.85. The mean percentage score of the participants is 39.5 and it could be inferred from the results that students have minimal knowledge when it comes to doing research.

Research Skills of SHS Student-Researchers

Research skills have been defined in this study as the set of activities done or conducted by the student researchers in conducting research. The present study investigated the research skills of SHS students through the agreement or disagreement of students in a series of statements present in a survey questionnaire.

Table 2 presents the skills in research method and data analysis of SHS students. As shown in the table below, SHS students have very good skills in identifying research method and data analysis tools for their research as reflected in the overall mean score of 3.58 (SD = 0.95).

SHS students agree to most of the statements describing research skills about research method and data analysis except the statement, “I can perform common statistical tools in any statistical applications like MS Excel, SPSS, Minitab, or others app.” This could suggest that students might not have knowledge in using the statistical applications in analyzing their research data.

Both the statements “I follow ethical standards in writing related literature” and “I can assess the reliability, reputation, currency, authority and relevance of sources” received the highest mean score ($M = 3.75$, $SD = 0.89$ and 1.81 , respectively). This suggests that students follow ethical guidelines in conducting research, specifically in writing related literature. Moreover, students believe that they can assess the reliability, reputation, currency, authority and relevance of sources as used in writing their related literature.

Table 2. Skills in Research Method and Data Analysis of SHS Students

Skills in Research Method and Data Analysis	Mean	SD	Description
I can elaborate key variables in my research topic.	3.53	0.88	Agree
I follow ethical standards in writing related literature.	3.75	0.89	Agree
I can identify and access appropriate bibliographical resources, archives and other sources of relevant information.	3.57	0.84	Agree
I can assess the reliability, reputation, currency, authority and relevance of sources.	3.75	1.81	Agree
I can evaluate the accurateness of the content by reading other sources mentioned by the writer.	3.57	0.90	Agree
When searching for information, I can arrange each item systematically.	3.54	0.81	Agree
I can write my references in any citation and referencing formats or styles.	3.50	0.92	Agree

I can formulate a conceptual framework for my research.	3.64	0.88	Agree
. I can determine the appropriate research design or method of my research.	3.56	0.88	Agree
. I can justify the principles and experimental techniques used in my own research.	3.53	0.84	Agree
. I can select or develop a research instrument to gather necessary data for my research.	3.57	0.94	Agree
. I can determine which statistical tool or method analysis to use for my research.	3.62	0.89	Agree
. I can perform common statistical tools in any statistical applications like MS Excel, SPSS, Minitab, or others app.	2.91	0.99	Neither Agree nor Disagree
. I can analyze and interpret the results of my statistical treatment or method analysis.	3.52	0.93	Agree
. I can evaluate and systematically organize the data I have gathered.	3.69	0.83	Agree
OVERALL RESULTS			Very Good Skills

Table 3 presents the skills in writing and reporting research results as reported by SHS students. It can be gleaned from the table that students have very good skills in writing and reporting research results as reflected by the mean score of 3.52 (SD= 0.88). All of the statements presented for the skills in writing and reporting research results have been agreed to by SHS students.

Among the 10 statements for skills in writing and reporting research results, statement number 7 which states that, “I can construct my own conclusion based on the information gathered” received the highest mean score (M = 3.60, SD = 0.91). This suggests that students believe that they can write their conclusions properly based on the findings of the study. Although students agree to statement number 3 which states that, “I can prepare grammatically and syntactically correct content for presentations” it received the lowest mean score (M = 3.40, SD = 0.81).

Table 3. SHS Students’ Skills in Writing and Reporting Research Results

Skills in Writing and Reporting Research Results	Mean	SD	Description
I have excellent knowledge of language(s) appropriate for research, including technical language.	3.48	0.9	Agree
I can understand, interpret, create, and communicate appropriately within an academic context.	3.59	0.83	Agree
I can prepare grammatically and syntactically correct content for presentations.	3.40	0.81	Agree
I can communicate research results clearly.	3.53	0.91	Agree
I can construct my thesis statement clearly.	3.42	0.89	Agree

I can organize my thoughts and ideas clearly and prepare a manuscript of my research	3.56	0.91	Agree
I can construct my own conclusion based on the information gathered.	3.60	0.91	Agree
I can clearly communicate complex research findings in a way that is understandable to the target audience.	3.51	0.88	Agree
I can effectively organize and structure my research report to ensure a logical flow of information.	3.54	0.87	Agree
I am skilled at using evidence and data from my research to support my claims and conclusions.	3.52	0.86	Agree
OVERALL RESULTS	3.52	0.88	Very Good Skills

Table 4 presents the skills in problem conceptualization of SHS students. As shown from the table, SHS students have very good skills in conceptualizing research problems as reflected in the mean score of 3.63 (SD = 0.88) and since SHS students agree to all statements describing the skills in problem conceptualization.

Table 4. SHS Students' Skills in Problem Conceptualization

Skills in Problem Conceptualization	Mean	SD	Description
I can indicate the scope and delimitation of my research.	3.66	0.97	Agree
If confronted by a question/problem, I can see it as an opportunity to do research.	3.61	0.83	Agree
I can identify and ask useful, challenging questions. I am always curious.	3.55	0.83	Agree
I can formulate my research topic/problem based on related literature and other sources.	3.58	0.89	Agree
I can write a research title.	3.85	0.90	Agree
I can create mind or concept mapping of my research topic/problem.	3.57	0.91	Agree
I can generate research questions based on the topic/problem.	3.75	0.81	Agree
I can justify the reasons for conducting the research.	3.70	0.89	Agree
I can gather information about my research topic through various means (e.g., electronic media, images, audio and video).	3.67	0.91	Agree
I can use the main ideas obtained from the information researched to support my topic.	3.63	0.90	Agree
I can combine the main ideas from one source or more to form a new idea.	3.60	0.88	Agree
I can observe and collect the necessary data that can support my problem.	3.67	0.87	Agree

. I can formulate research hypothesis properly based on related literature and research problems.	3.55	0.89	Agree
. I can narrow down a broad research topic into a specific and well-defined problem.	3.52	0.89	Agree
. I can identify the appropriate research methods for addressing a particular research problem.	3.60	0.90	Agree
OVERALL RESULTS	3.63	0.88	Very Good Skills

Among the statements listed, statement number 5 which states that, “I can write a research title” received the highest mean score ($M = 3.85$, $SD = 0.90$). This suggests that students believe that they can write their own research titles based on topics presented to them.

Research Attitudes of Senior High School Students

Research attitude has been defined in this study as SHS students’ views and evaluation, whether positively or negatively, towards doing research. Attitude towards research will be collected using an attitudinal survey questionnaire. The research attitude has been investigated in this study using a survey questionnaire with 50 statements that describe the students’ views and evaluation, whether positively or negatively, towards doing research.

A series of statements on the views and opinions of SHS students on the usefulness has been included in the survey on research attitudes of SHS students. Table 5 presents the results of the survey conducted on research usefulness.

Among the statements that present research usefulness, statement number 5 which states that, “The skills I have acquired in research will be helpful to me in the future” received the highest mean score ($M = 3.83$, $SD = 0.90$). This confirms the overall view of SHS students about the usefulness of research.

However, the SHS students neither agree nor disagree on the statement which says that “Research findings are a waste of time and don’t contribute to solving real-world problems.” It could be seen that there are doubts surrounding the contribution of research to solving real-world problems as far as SHS is concerned.

In general, the SHS students view research as useful in their daily lives as reflected by the mean score of 3.55 ($SD = 0.64$).

Table 5. Attitude of SHS students towards research usefulness

Attitude towards Research Usefulness	Mean	SD	Description
Research should be taught to all students	3.83	1.18	Agree
Research is useful for my career	3.72	1.10	Agree
Research is connected to my field of study	3.79	0.94	Agree
Research findings are a waste of time and don’t contribute to solving real-world problems.	2.71	1.28	Neither Agree nor Disagree
The skills I have acquired in research will be helpful to me in the future	3.84	0.90	Agree

Conducting research is only important for academics and has no practical value in everyday life.	3.01	1.20	Agree
Knowledge from research is as useful as writing	3.74	1.01	Agree
Research should be indispensable in my professional training	3.48	0.98	Agree
I will employ research approaches in my profession	3.63	0.91	Agree
I am more likely to trust information presented with research data to back it up.	3.75	0.86	Agree
OVERALL RESULTS	3.55	0.64	Useful

SHS students neither agree nor disagree to three out of 10 statements which include, “Research makes me anxious” ($M = 3.28$, $SD = 1.11$), “I feel insecure concerning the analysis of research data” ($M = 3.23$, $SD = 0.99$), and “Research scares me” ($M = 3.25$, $SD = 1.05$). This suggests that students cannot decide whether doing research scares or makes them anxious.

Table 6. Attitude of SHS students towards research anxiety

Attitude towards Research Anxiety	Mean	SD	Description
Research makes me anxious.	3.28	1.11	Neither Agree nor Disagree
I feel insecure concerning the analysis of research data.	3.23	0.99	Neither Agree nor Disagree
Research scares me.	3.25	1.05	Neither Agree nor Disagree
Research is stressful.	3.66	0.99	Agree
Research makes me nervous.	3.55	1.01	Agree
I worry that my research won't be good enough or I'll miss something important.	3.70	0.92	Agree
Finding the right sources to answer my research question makes me anxious.	3.49	0.97	Agree
Deadlines and time pressure associated with research projects make me anxious.	3.74	0.99	Agree
Citing sources correctly and avoiding plagiarism makes me anxious about making mistakes.	3.66	0.9	Agree
Feeling lost in the research process and not knowing where to start makes me anxious.	3.64	0.92	Agree
OVERALL RESULTS	3.52	0.72	Anxious

For SHS students, the deadlines and time pressure make them anxious in doing research as reflected by the mean score of 3.74 ($SD = 0.99$) for the statement, “Deadlines and time pressure associated with research projects make me anxious.”

In general, SHS students are anxious in doing research as reflected by the overall mean score of 3.52 ($SD = 0.72$).

The positive disposition towards doing research has been defined in this study as SHS students' positive views about doing research regardless of any difficulties experienced

throughout the research process. A series of statements about positive disposition towards research have been included in the survey. Table 7 presents the results of the survey.

Table 7. Positive Disposition towards Research

Positive Disposition towards Research	Mean	SD	Description
I enjoy research.	3.16	1.04	Neither Agree nor Disagree
Research is interesting.	3.47	0.93	Agree
I like research.	3.23	1.96	Neither Agree nor Disagree
Feeling confident in my research skills empowers me to tackle new challenges and questions.	3.48	0.85	Agree
I am interested in research	3.33	0.93	Neither Agree nor Disagree
Research allows me to explore my curiosity and delve deeper into topics that interest me.	3.62	0.85	Agree
I am inclined to study the details of research procedures carefully	3.58	0.87	Agree
I view research as an opportunity to contribute to knowledge and potentially make a positive impact.	3.59	0.9	Agree
I find the challenge of solving problems through research to be stimulating and rewarding.	3.48	0.88	Agree
Research excites me because it's a journey of discovery and learning new things.	3.55	0.94	Agree
OVERALL RESULTS	3.45	0.71	Highly Positive

Among the 10 statements included in the survey about positive disposition towards research, SHS students neither agree nor disagree to three statements which include, “I enjoy research” ($M = 3.16$, $SD = 1.04$), “I like research” ($M = 3.23$, $SD = 1.96$), and “I am interested in research” ($M = 3.33$, $SD = 0.93$).

SHS students regarded research as a way to explore their curiosity and have a deeper understanding of the topics that interest them, as reflected by the mean score of 3.62 ($SD = 0.85$) for the statement, “Research allows me to explore my curiosity and delve deeper into topics that interest me.”

In general, SHS students have highly positive disposition towards doing research as reflected by the overall results ($M = 3.45$, $SD = 0.71$).

The term relevance of research to daily life has been defined in this study as the views and opinions of SHS students as to the importance of doing research in their daily lives. A series of statements that show the importance of doing research into one's life has been included in the survey questionnaire. Table 8 presents how SHS students view the relevance of research to one's daily life.

Table 8. Relevance of Research to Daily Life

Relevance of Research to Daily Life	Mean	SD	Description
I use research in my daily life	3.09	1.05	Neither Agree nor Disagree
Research is irrelevant to my life	2.98	1.00	Neither Agree nor Disagree
Research thinking does not apply to my personal life	2.97	1.02	Neither Agree nor Disagree
Research-orientated thinking plays an important role in my daily life	3.41	0.91	Agree
Research findings rarely influence the decisions I make in my everyday life.	3.14	0.95	Neither Agree nor Disagree
The latest scientific advancements through research have little impact on the products I use or the services I access.	3.29	0.94	Neither Agree nor Disagree
Research plays no role in developing the apps and technologies we rely on daily.	2.98	1.13	Neither Agree nor Disagree
Understanding research on weather patterns is helpful in planning daily activities.	3.57	0.91	Agree
Research on social issues is relevant to improving our communities and daily lives.	3.63	0.89	Agree
. When faced with challenges in daily life, seeking research is a valuable tool in finding solutions.	3.51	0.97	Agree
OVERALL RESULTS	3.26	0.64	Moderately Relevant

Among the 10 statements about the relevance of research to daily life, SHS students agreed to only four statements. SHS students neither agree nor disagree with the other six statements. This could suggest that SHS students do not understand yet the relevance of doing research in their daily lives.

The statement which says, “Research on social issues is relevant to improving our communities and daily lives” received the highest mean score ($M = 3.63$, $SD = 0.89$) among the 10 statements. This could suggest that SHS students view social research as relevant in improving communities and daily lives.

In general, SHS students view research as moderately relevant in their daily lives as reflected by the overall mean score of 3.26 and a standard deviation of 0.64.

Difficulty in research has been defined in this study as SHS students’ views about the obstacles or challenges one may experience in doing research. Ten statements have been included in the survey questionnaire to determine the views of SHS students about difficulties in doing research. Table 9 presents the results of the survey.

Among the 10 statements, SHS students agreed to only one statement which states that “Research is complex” ($M = 3.45$, $SD = 0.9$), while the other nine statements, SHS students

responded neither agree nor disagree. This could suggest that SHS students would need more experience in doing research to tell whether doing research is difficult or not.

In general, SHS students view doing research as moderately difficult ($M = 3.21$, $SD = 0.64$).

Table 9. Difficulty in Doing Research

Difficulty in Doing Research	Mean	SD	Description
I find it difficult to understand the concepts of research	3.24	0.88	Neither Agree nor Disagree
Research skills come naturally to me, and I do not need to seek help or guidance.	2.78	1.03	Neither Agree nor Disagree
I have trouble with arithmetic/statistics	3.32	0.98	Neither Agree nor Disagree
Research is a complicated subject	3.30	0.96	Neither Agree nor Disagree
Research is complex	3.45	0.9	Agree
Finding relevant and reliable sources to answer my research question is a piece of cake.	2.95	1.00	Neither Agree nor Disagree
Narrowing down a broad research topic into a focused question feels effortless.	3.01	0.98	Neither Agree nor Disagree
Evaluating the credibility and bias of information I find during research is not a quick and easy task.	3.37	0.97	Neither Agree nor Disagree
Citing sources correctly and avoiding plagiarism is a difficult thing to do.	3.3	1.11	Neither Agree nor Disagree
. Presenting my research findings in a clear and concise way is always a difficult experience.	3.38	0.92	Neither Agree nor Disagree
OVERALL RESULTS	3.21	0.64	Moderately Difficult

Challenges Encountered by SHS Students in Doing Research

A semi-structured interview was conducted to solicit the challenges encountered and coping mechanisms applied by SHS students in conducting research. A thematic analysis of the interview responses has been conducted and revealed five themes in relation to the challenges encountered by SHS students in doing research. These themes are presented in Table 10.

Table 10. Challenges Encountered by SHS Student-Researchers

Themes	Description
Challenges in Data Collection and Analysis	This theme highlights the practical difficulties researchers encounter when collecting and analyzing data. These difficulties can range from logistical challenges to interpersonal challenges.
Resource Constraints and Limitations	This theme underscores the significant impact of resource constraints on the research process. These constraints can include financial

	limitations, limited access to technology and resources, and a lack of necessary knowledge or expertise.
Time Management and Deadlines	This theme emphasizes the importance of effective time management in research.
Challenges in Finding and Using Information	This theme highlights the difficulties researchers encounter in finding, evaluating, and utilizing relevant information, particularly in the context of literature reviews. These challenges include locating credible sources, understanding and synthesizing information, and citing sources appropriately.
Group Dynamics and Collaboration	This theme emphasizes the significant role of group dynamics and collaboration in research. Challenges related to group dynamics can include issues with communication, coordination, and the division of labor.

The themes identified in relation to challenges encountered in doing research include (1) Challenges in Data Collection and Analysis, (2) Resource Constraints and Limitations, (3) Time Management and Deadlines, (4) Challenges in Finding and Using Information, and (5) Group Dynamics and Collaboration.

a) Theme 1: Challenges in Data Collection and Analysis

The theme Challenges in Data Collection and Analysis highlights the practical difficulties that SHS students encounter when collecting and analyzing data. These difficulties can range from logistical challenges such as accessing respondents, transportation issues to interpersonal challenges such as uncooperative respondents, and difficulties in conducting interviews.

When asked about their experiences in doing research, one participant answered, “It’s very hard for me to conduct research because the other students who are selected to participate/respondents is not giving some energy to cooperate.” Another participant responded, “Well, it is a[n] exhausted job especially in conducting or distribute[ing] the questionnaire [to] my respondents.” Another participant responded, “In conducting research, I would describe my research experiences as difficult because other respondents are not cooperating.” The cooperation of participants is seen as one challenge in conducting research. As experienced by SHS students, they are not taken seriously by the respondents. As a result, the respondents were not cooperative in the research process. This makes data collection difficult on the part of the SHS students.

The logistical problem in data collection has also been experienced by SHS students as described by one participant in their response that “when we conduct research our respondents are very far, so our problem is the vehicle/transportation.”

Analyzing data has also been considered as one challenge in conducting research as reflected in the responses of SHS students such as “In conducting research, I will describe my research experiences as difficult because analyzing data is hard” and “Conducting research is hard because analyzing data is difficult.” There are several reasons why the students experience

this difficulty in analyzing data, one explanation could be that the topic data analysis is considered a least mastered lesson in SHS research subjects.

b) Theme 2: Resource Constraints and Limitations

The theme Resource Constraints and Limitations underscore the significant impact of resource constraints on the research process. These constraints can include financial limitations, limited access to technology and resources such as internet, equipment, and other devices, and a lack of necessary knowledge or expertise to manipulate such technology and resources.

When participants were asked about their experiences in doing research, one participant answered, “I have encountered many problems in research problems such as funding, time constraints, and insufficient knowledge about a particular topic of the research project.” This response clearly indicates resource constraints on the part of the SHS students, especially funding, time and insufficient knowledge about a particular topic. Since SHS students are not working students and they rely on the allowances provided by their parents, SHS students experience funding problems for their research.

Part of the resource constraints experienced by SHS students were technology limitations as described by one participant in her response which states that “the problem I encountered is the lack of laptop and internet to help us conduct research.” Laptops and the internet to access other information by searching the web are considered as resource constraints. Not all SHS students have their own laptops and have access to internet. Thus, this challenge is experienced by most of SHS students in Catanduanes.

Establishing validity and reliability of research instrument could also be considered as part of the resource constraints and limitations as one participant mentioned in their response that “some of our research instrument didn’t work.” When asked with follow up question as to what the participant mean by “our research instrument didn’t work” the participant explained that according to their research teacher, the data the collected do not answer the research question posted in their research proposal. They were told by their teacher that the data collected could not answer the research question and concluded that their research instrument did not work. This is a typical experience of student researchers when their instruments are not validated. SHS students need to learn more about establishing the validity and reliability of their research instruments.

c) Theme 3: Time Management and Deadlines

The theme Time Management and Deadlines emphasize the importance of effective time management in research. Deadlines, multiple projects, and other academic commitments can create significant time pressure, leading to stress and anxiety. As SHS students, there were other subjects simultaneously taken with research subjects. This simultaneous taking of subjects with research can lead to challenges with regard to time management and deadlines.

When participants were asked about their experiences in doing research, one participant answered “It’s so hard to conduct research. It is very stressful and need to manage our time for research.” Another participant responded, “time management is a problem in research because we have so many school activities that have the same deadline.” Based on the responses of the participants, having a research schedule within the time frame provided by the teachers is one challenge that SHS students experience. One explanation for this is that other

than the research subject, there are still other subjects that need the attention and time of SHS students. Curriculum planners and school administrators should arrange the subject offering in SHS in such a way that when a research subject is offered, no other subject must be offered, if not at least fewer subjects will be offered simultaneously with the research subject.

Coupled with other problems, time management is always mentioned as one challenge in conducting research, as mentioned by one participant who says that “I have encountered various problems and difficulties in doing research, time management is often a challenge in research projects.”

d) Theme 4: Challenges in Finding and Using Information

The theme Challenges in Finding and Using Information highlights the difficulties SHS student-researchers encounter in finding, evaluating, and utilizing relevant information, particularly in the context of literature reviews. These challenges include locating credible sources, understanding and synthesizing information, and citing sources appropriately.

When asked about their problems in doing research, one participant answered, “The common challenges face by student while constructing research proposal include identifying research gaps, reviewing and criticizing [literature].” This response suggests that doing literature review is one of the challenges encountered by SHS students. Evaluating literature and which to include in the review of related literature has also been a challenge to SHS students as reflected in the response of one participant which says that “it is difficult to analyze related articles and what to include in the Chapter 2.” Doing Chapter 2, being the typical part where reviews of related literature and studies are placed, has been a challenge among SHS students. One participant answered that “what to do in our RRL.” This response could suggest that SHS students find it difficult to write their review of related literature and studies. As the RRL would mean Review of Related Literature, it suggests that SHS students do not understand yet how to write their review of related literature and studies. One participant mentioned in the interview that “I experience several problems in research especially in finding related literature that best fit in my study.”

This challenge stems from the poor explanation of how reviews of related literature and studies are written, its role in the research and its significance in the discussion of results and findings. Responses from the interview suggest that SHS students are not knowledgeable in doing the review of related literature and studies.

e) Theme 5: Group Dynamics and Collaboration

The theme Group Dynamics and Collaboration emphasize the significant role of group dynamics and collaboration in research. Challenges related to group dynamics can include issues with communication, coordination, and the division of labor.

When asked about the problems they experienced in doing research, one participant said, “when your groupmate won’t cooperate with you when you’re doing your paper alone.” This is a typical problem in group activities, especially when students who are not cooperative are being paired with members who are top performing in the classroom. The top performing students tend to do the activity alone while the non-cooperative students let them do so. These non-cooperative students believe that their group mates who are top performers will not let the group suffer because by doing so their grades will also suffer which will make them ineligible to classroom or school awards.

Another response given by one participant is that “my team members do not understand our research topic and so I do it alone.” In group research projects, having research topics agreed upon by the members of the group is essential. If not, all members do not understand the topic, it will lead to different challenges in the research process. Other participants shared in Bikol dialect “*sobrang mahirap, mas lalong mahirap kapag mag-isa ka na ngang gumagawa, wala pang caring*” [research is very difficult especially if you are the only one doing the research and no one cares].

From the responses of participants, it suggests that group research projects are a challenging task for SHS students. Although group research projects tend to become a challenging task for SHS students, doing research alone is far more challenging.

DISCUSSION

This study was carried out to determine the challenges encountered by SHS students in conducting research. This study explored the knowledge, skills and attitudes (KSA) of SHS students and relates the KSA to the challenges encountered by SHS students. Findings of the study reveal contradictory information about the research knowledge, skills, attitudes and challenges encountered by SHS students when it comes to conducting research. Findings show that SHS students have minimal knowledge about research.

Results of this study reveal that SHS students showed a minimal knowledge about research. This finding is somewhat different from the findings of Kyaw Soe (2013) and Estacio et al. (2018), which state that students’ knowledge about research is only at an average or moderate level. Findings of this study suggest that students’ knowledge about research did not reach the average or moderate level, but only at a minimal level.

Results of this study support the findings of Assar et al. (2022) where students are found to have a lack of understanding of research. However, contradictory to these findings, SHS students reported to have very good research skills and a highly positive attitude towards research. These contradictory findings may be the result of the lack of foundational knowledge about research, suggesting that since SHS students do not understand the complexity of the research process, they tend to overrate themselves with respect to their research skills and attitudes toward research. According to Salters-Pedneault (2023), self-reporting of survey questionnaires may tend to result in a biased information since “many individuals are either consciously or unconsciously influenced by social desirability.” This disconnect between the self-reported skills and attitude towards research with their actual knowledge about research is quite alarming.

Other than the disconnect between self-reported skills and attitude toward research with their actual knowledge about research, there are also contradictory findings with regard to the challenges encountered by students. Results of the study showed that students self-reported to have a very good skills in Research Method and Data Analysis, however thematic analysis revealed that SHS students experience challenges in data collection and analysis.

Lacson (2022) recommends that there is a need for students to enhance their research skills in identifying research methods and data analysis and writing and reporting results. This confirms the findings of the study that SHS students find it challenging to identify research methods and data analysis and write and report research results. This has been referred to as the theme Challenges in Data Collection and Analysis in this study.

The time management has also been identified as one of the challenges encountered by SHS students. According to Bocar (2011), students will always experience the managing time as a challenge in doing research because most often there are still other academic requirements from other subjects.

The findings of Balbag et al. (2024) support the theme Resource Constraints and Limitations as identified in this study, which underscores the significant impact of limited resources on the research. Their study found that under resources, the challenges encountered by SHS students include the lack of necessary tools for encoding and editing, lack of financial resources, lack of books and resources, poor internet connections, and lack of printing devices. Antonio (2021), who found that in a blended learning implementation, faculty members reported that students had no internet connection at home, some lacks mobile phone signals, and several noted that students lacked the necessary gadgets for online learning. This empirical evidence confirms that when research teaching relies on online platforms, students without adequate hardware or connectivity are automatically disadvantaged in conducting literature reviews and data encoding. However, among these problems, Balbag et al. (2024) reported that financial resources have been considered as the major problem encountered by students.

Findings of Qazim and Zayid (2019) confirm the theme Time Management and Deadlines as one of the problems encountered by students in conducting research. The challenge faced by students with regard to time management is that they have inefficient time management for other school activities.

The theme Challenges in Finding and Using Information highlights the difficulties SHS student-researchers encounter in finding, evaluating, and utilizing relevant information, particularly in the context of literature reviews. This confirms the findings of Lumanta (2023) that SHS students encountered problems in conducting related studies and literature reviews. Tabuena (2020) reported that students are finding it challenging to write a full research paper. Wilang et al. (2018) described that writing issues are due to lack of writing skill and lack of confidence in writing research papers.

The challenge in relation to group dynamics and collaboration has been identified in another previous research. According to Hussein (2021) the challenges group dynamics and collaboration are due to a lack of ability to understand each other's viewpoints. But this is not necessarily because of a lack of project structure. This study identified that challenges related to group dynamics could include issues with communication, coordination, and the division of labor as confirmed by (Hussein, 2021). This challenge has been coined as the theme Group Dynamics and Collaboration in this study.

These contradictory findings in this study highlight the importance of a targeted program in addressing the challenges in the research processes and strategies for effective group work which is crucial for fostering genuine research competence among senior high school students. The lack of preparation in research knowledge and abilities, as explained by Gilmore and Feldon (2010) and Meerah et al. (2012), is considered one of the main reasons why students experience challenges in conducting research.

CONCLUSION

This study reveals a complex and somewhat paradoxical picture of SHS students' research capabilities in Catanduanes. While students generally report a high level of

confidence in their research skills and express a positive attitude towards research, their minimal foundational knowledge of the research process suggests a potential disconnect between perceived ability and actual understanding. This discrepancy highlights the importance of moving beyond self-reported skills and attitudes to assess actual research competency. The finding that research skills are not related to research knowledge further underscores this point, indicating that students may be developing practical skills through experience, but without a strong theoretical framework to support them.

The study also sheds light on the nuanced influence of SHS track and strand on research knowledge and attitude. While overall research skills remain consistent across different strands, STEM students demonstrate a stronger grasp of research concepts, likely due to the emphasis on scientific methodology within their curriculum. Conversely, Industrial Arts students in the TVL track exhibit a more positive attitude toward research, perhaps reflecting the practical and applied nature of their field. These findings suggest that specific curricular elements can influence both research knowledge and attitudes, highlighting the potential for targeted interventions to enhance research capacity across all tracks.

Furthermore, the identified challenges encountered by students in conducting research provide valuable insights for educators and curriculum developers. The five overarching themes – Challenges in Data Collection and Analysis, Resource Constraints and Limitations, Time Management and Deadlines, Challenges in Finding and Using Information, and Group Dynamics and Collaboration – paint a comprehensive picture of the obstacles students face. Addressing these challenges, through improved resource allocation, targeted training in information literacy and data analysis, and strategies for effective group work, is crucial for fostering genuine research competence among senior high school students.

Findings of this study underscores the need for a more holistic approach to research education in Catanduanes. While students' positive attitudes and perceived skills are encouraging, the identified knowledge gaps and practical challenges necessitate a renewed focus on building a strong foundation in research principles and providing students with the necessary resources and support to navigate the complexities of the research process. By addressing these issues, educators can empower students to become confident and competent researchers, capable of contributing meaningfully to their fields of study and beyond.

Findings of this study revealed contradictory information regarding the knowledge, skills, attitudes and challenges encountered by SHS students in conducting research. This disconnect between the actual knowledge of SHS students and their self-reported research skills, attitudes, and challenges highlighted the importance of having a targeted program that will address the needs of SHS students in conducting research

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