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Research Article

RESEARCH CAPABILITY OF SENIOR HIGH SCHOOL STUDENTS: TEACHER'S EVALUATION VS. STUDENT'S SELF-ASSESSMENT

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Abstract

This study examined and compared the research capability of senior high school students as assessed by their teachers and as self-assessed by the students themselves. The purpose of this study is to assess the level of agreement or discrepancy between the teacher evaluations and student self-assessments regarding the research capabilities of senior high school students in terms of the research background, problem and hypothesis, research design and methods, and report research. A descriptive research design was utilized using a researcher-made survey questionnaire that undergone validity and reliability. Data was gathered from 277 students and 20 teachers in public schools. Gathered data were systematically treated and analyzed using descriptive and inferential statistics. Results revealed that the research capability of senior high students is generally less competent. There was no statistically significant difference in the assessment between students and teachers, which suggests that teachers' evaluation of their students' research capability coincides with the students' self-assessment.

Keywords: Research Capability, Research Skills, Research Process

Introduction

Research is an essential tool in national and global progress, solves social problems, and makes life more convenient (Al-Assaf, 2020; Faltado et al., 2016; Monro, 2017). The main goals of the research are to provide evidence for hypotheses, guide action, and advance knowledge in a particular field of study (Zarah, 2022). In the K to 12 curriculum, senior high students must present write-ups of the research process. However, as observed, writing a research output takes much work for students. The formulation of each component in

every chapter of the research output burdens the students (Ciocon, 2018). However, there is a growing concern regarding the insufficient research capability in the context of senior high school students. This problem can significantly hinder their academic and personal growth, as well as their future prospects. Hence, this study assessed the research capability of senior high school students' assessment of their research capability in terms of research background, problem and hypothesis, research design methods, and writing the research report. On the part of the teachers, what is essential is their evaluation as to whether the students learned the research process or not and identify which interventions are necessary to help students to improve their research process competency. By addressing this concern, educators and stakeholders can work towards empowering students to become competent researchers, thus preparing them for higher education and the demands of the modern workforce.

Many students often overlook the importance of writing a research paper and consider it a burden. They need to be made aware that it is a chance to learn skills crucial to understanding how a particular body of knowledge is generated. As soon as classes begin, teachers frequently notice that the once-exciting classroom has been painted with monotony, passivity, and a lack of enthusiasm and drive when teaching the rigorous research paper writing requirements. Additionally, senior high school students are seen to need more confidence and be uneasy about continuing the writing task itself when assigned a topic for research writing. Writing research output, as observed, takes a lot of work for the students. The study by Roxas (2020) revealed that senior high students claimed to experience anxiety since they could not fully understand the basics and essence of research and its laborious and complex process. On the contrary, Gallos (2017) inferred that SHS students would likely have a positive attitude toward research if he or they minimally experience hardship in doing research.

Research capability is the ability to conduct research effectively and efficiently which involves various skills, including formulating research questions, designing research studies, collecting and analyzing data, interpreting findings, and communicating results effectively. Having strong research capability allows individuals to produce high-quality research that is rigorous, reliable, and relevant to the intended audience. It enables them to contribute to advancing knowledge in their field and make informed decisions based on evidence (Hughes, 2019; Salom, 2013). With that, the school's role in providing a valuable learning experience is vital to develop the essential knowledge and skills of the students in conducting research. Ismail and Meeran (2012) pointed out that the research capability is to carry out data collection activities. This includes planning and choosing suitable data collection tools, identifying the correct method for interpreting and manipulating data, and applying an appropriate statistical tool to test the significance in addition to understanding. Such competence may evolve due to experience and pertinent capacity-building initiatives (Manongsong & Panopio, 2018).

There have been numerous studies on research capability (Aryani et al., 2015; Formeloza & Pateña, 2013; Sadler, 2010). The study by Estacio et al. (2018) revealed that SHS students had the average capability to conduct research. Furthermore, the students see themselves as more capable of undertaking qualitative rather

than quantitative research. In a similar study, choosing an appropriate sample size for the study is the senior high school student's most substantial capability, whereas presenting a review of related literature is the lowest in rank. This means that it is an area that needs further improvement (Santos, 2019). Ciocon (2018) further inferred that students find it challenging to accomplish analysis and interpretation of data. Results also showed that the literature review and methodology, which included the data gathering procedure, had been complex for the students. Correct grammar usage had also been difficult for them.

The cited literature has merged information that established the relationship of the variables used in the study. The works of Estacio et al. (2018), Santos (2019), and Ciocon (2018) gave similar perspectives on the research capabilities of senior high school students in the Philippines. Studies have shown that research capability requires consistent application of the acquired knowledge and skills to produce research output and innovation. It was strengthened by Manongsong and Panopio (2018), who accentuated that research capability may develop through experience, continuing, and relevant capacity-building activities.

Considering all the preceding observations, this research assessed the level of the research capability of senior high school students. This study is based on the premise that the research capability of senior high school students is an excellent factor in the accomplishment of their research endeavors. The findings will serve as a basis for developing an intervention program on the research capability of senior high school students.

Objectives

This study aims to (1) assess the research capability of senior high school students through teacher's evaluation and student's self-assessment and (2) identify any discrepancies or similarities between the two evaluation methods and determine whether the student's self-assessment accurately reflects their research capability.

Methodology

The study made use of a descriptive research design to assess the research capability of senior high school students. This design employs descriptive techniques to answer questions regarding current conditions (Bago, 2016). This design provides an objective and accurate snapshot of the research capability of senior high school students without any preconceived biases or notions. It allows for collecting large amounts of quantitative data, such as surveys or standardized tests, to identify patterns, trends, and relationships between different variables. A probability sampling technique using a simple random sampling was employed in selecting 277 students out of 1025 students at 0.05 margin of error to come up with the sample size, and 20 teachers fully represented the teachers in 15 public senior high schools in Surigao City, Philippines. This sampling technique was utilized because every case of the population has an equal probability of inclusion in sample (Ghauri & Gronhaug, 2005).

A researcher-made survey questionnaire based on the Most Essential Learning Competencies (MELC) subject Practical Research 2 of the Department of Education was utilized in the study. The content validity of the instrument was conducted and authenticated by experts in research instrumentation. Items that do not fit in the context were either removed or modified. The evaluator's comments and suggestions were considered in the final draft, and the reliability of the instrument was also established using Cronbach's alpha obtaining 0.89 which is interpreted as "Good". This questionnaire measured the student's capability to write a research paper. This instrument was utilized for the two groups of respondents: students and teachers. The student-respondents assessed themselves by completing the evaluation questionnaire as to their level of research capability to write a research paper. At the same time, the teacher-respondents were requested to rate the corresponding students under their practical research class using the same questionnaire. Rating students in terms of research capability is essential as it allows teachers to identify individual strengths and areas for improvement, fostering targeted skill development and preparing students for higher education and future careers. The questionnaire contained 20 questions on the level of the research capability of the students as perceived by the students and teachers, consisting of four (4) indicators as Research Background, Research Problem, and Hypothesis; Research Design and Methods; and Report Research. For each question, the two groups of respondents expressed their agreement on a four-point Likert-type scale by marking the corresponding number on the scale that best represents their agreement with the question. Descriptive statistics were used to determine the research capability of SHS students based on students' self-assessment and teachers' evaluations. An Independent sample t-test was used to test whether the assessment of the students and the research teachers differ significantly.

Results and Discussion

Extracted from the responses of both the students and teachers, it was revealed in Table 1 that students' level of research capability was predominantly rated as competent. Ultimately, four out of six indicators demonstrated a good level of students' research capability, predominantly in how the students write a research title. Indeed, it can be concluded that the students were able to understand and learn the concepts of writing a research title and the understanding of describing the background of the research, and defining terms used in the study.

However, multiple points in how the students were not competent in illustrating and explaining the conceptual framework, and a present written review of related literature and conceptual framework were rated as less competent. This suggests that students have limited knowledge of these concepts, which are essential to understanding the relationships among ideas and variables concerning the real world. It will show the readers how different elements combine to enable research to understand results clearly. Nevertheless, relating these ideas to the study's findings requires students to develop their ability to illustrate and explain the conceptual framework.

The study by Santos (2019) found that presenting a written review of related literature is considered an area for improvement of the student's research capability. Dunn et al. (2008) viewed the review of related literature as their learning curve, which helps them to gain experience and new knowledge. This is the main reason why presenting reviews of related literature should be improved on the part of future researchers.

Table 1 Research Capability of SHS Students in terms of Research Background and Rationale

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
1.Write a research title	3.01±0.61	2.94±0.76	2.98±0.69	C	Good	1
2.Describe background of research	2.73±0.66	2.67±0.82	2.70±0.74	C	Good	3
3.Indicate scope and delimitation of study	2.65±0.75	2.45±0.74	2.55±0.75	C	Good	4
4.Illustrate and explain the conceptual framework	1.71±0.73	1.72±0.83	1.72±0.78	NC	Poor	6
5.Define terms used in study	2.85±0.69	2.83±0.75	2.84±0.72	C	Good	2
6.Present written review of related literature and conceptual framework	2.39±0.70	2.43±0.74	2.41±0.72	LC	Fair	5
Composite MeanSD	2.56±0.69	2.51±0.77	2.54±0.73	C	Good	

Legend: *1.00-1.75 (Not Competent -NC); 1.76-2.50 (Less Competent-LC); 2.51-3.25 (Competent-C); 3.26-4.00 (Highly Competent-HC)*

In table 2, in terms of research problem and hypothesis, this indicator has been rated as less competent. This indicates that the students were generally less competent in stating research questions, presenting a written statement of the problem, and listing the research hypothesis. The said students' discernment agreed with the teachers' evaluation. The study by Estacio et al. (2018) showed that senior high school students had difficulty formulating a hypothesis. Students have no clear idea of how to formulate a hypothesis. This implies that formulating a hypothesis is difficult for students.

Table 2 Research Capability of SHS Students in terms of Research Problem and Hypothesis

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
1.State research questions.	2.21±0.72	2.28±0.83	2.25±0.78	LC	Fair	1
2.Present written statement of the problem	1.95±0.68	2.18±0.81	2.07±0.75	LC	Fair	3
3. List research hypothesis	2.06±0.70	2.29±0.77	2.18±0.74	LC	Fair	2
Composite MeanSD	2.07±0.70	2.25±0.80	2.16±0.75	LC	Fair	

Teachers' evaluation and students' self-assessment on research design and methods is presented in Table 3. Research design and methods comprises the research paradigms, sampling designs, instruments, and used of statistical tools (Rahi, 2017). This indicator was overall rated as "Less Competent". Presenting written research methodology got the highest mean and standard deviation, while choosing the appropriate quantitative research design was rated as "Not Competent". These results could be due to students' limited knowledge and skills in the aspects of research design and methodology. Teachers play a vital role in providing students with authentic and relevant learning experiences to learn best and acquire basic knowledge and skills. Salom (2013) found that the teachers lacked the skills needed to construct data-gathering instruments, do statistical treatments, and interpret findings. Akyürek and Afacan (2018) revealed that even master's and doctoral students usually have difficulties with the higher-level thinking skills required in research, especially regarding methodology.

Table 3 Research Capability of SHS Students in terms of Research Design and Methods

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
1. Choose appropriate quantitative research design	1.72±0.74	1.74±0.84	1.73±0.79	NC	Poor	8
2. Describe sampling procedure and sample	1.93±0.83	1.99±0.89	1.96±0.86	LC	Fair	7
3. Construct an instrument and establishes its validity and reliability	2.02±0.80	2.00±0.87	2.01±0.84	LC	Fair	5
4. Plan data collection Procedure	2.22±0.73	2.20±0.85	2.21±0.79	LC	Fair	3

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
5. Plan data analysis using statistics and hypothesis testing	2.06±0.75	2.09±0.84	2.08±0.80	LC	Fair	4
6. Present written research methodology	2.25±0.75	2.23±0.87	2.24±0.81	LC	Fair	1
7. Collect data using appropriate instruments	2.19±0.79	2.27±0.84	2.23±0.82	LC	Fair	2
8. Use statistical techniques to analyze data	1.85±0.72	2.10±0.87	1.98±0.80	LC	Fair	6
Composite MeanSD	2.03±0.76	2.08±0.86	2.06±0.81	LC	Fair	

The research capability in terms of report research based on students' self-assessment and teachers' evaluation is presented in Table 4. It can be gleaned that the students were "Less Competent" in general. They were less competent in all the indicators in report research such as presenting and interpreting data in tabular or graphical forms, drawing conclusions from research findings, and formulating recommendations. This would suggest that senior high students need research intervention program that will address the need and eventually equip them with the necessary skills to engage in research.

The results are congruent to the study of Estacio et al. (2018) who found out that senior high students cannot interpret frequency distribution. They have low research skills research skills in data representation in terms of charts and graphs and cannot interpret frequency distribution. In addition, Agatep and Villalobos (2020) found that even graduate students were less capable in writing results and discussion, and moderately capable in writing conclusion and recommendation. There is a need for students to learn in presenting statistical data as results and discussion is concerned.

Table 4 Research Capability of SHS Students in terms of Report Research

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
1. Present and interpret data in tabular or graphical forms	1.74±0.62	2.17±0.80	1.96±0.71	LC	Fair	3
2. Draw conclusions from research findings	2.30±0.69	2.40±0.87	2.35±0.78	LC	Fair	2

Indicators	Research Capability		MeanSD	DV	Interpretation	Rank
	Teachers' Perception	Students' Self-Assessment				
3. Formulate recommendations	2.33±0.67	2.40±0.72	2.37±0.70	LC	Fair	1
Composite MeanSD	2.12±0.66	2.32±0.77	2.22±0.72	LC	Fair	

Teachers' Evaluation vs. Students' Self-Assessment

A significant difference between the student's self-assessment and teachers' evaluation of the research capability is presented in Table 5. Findings showed that the student's self-assessment and teachers' evaluation were rated as less competent, respectively. In addition, there is no statistically significant difference in the assessment between students and teachers ($p = 0.153$). This would suggest that the teachers' evaluation of their students' research capability coincides with the student's self-assessment.

The study findings signify that senior high school students have difficulties conducting research. Teaching the essential concepts of research should be improved. They need proper training to develop their research skills and produce quality research output. Lack of research experience affected students' interest and participation in research activities. Research experience improves the interest and skill of the students to conduct research activities and can be achieved by participating in research workshops (Safari et al., 2015).

Table 5 Significant Difference between the Evaluation made by Students and Research Teachers

Respondents	Mean (SD)	T-test Statistic (552)	P-value	Remark
Students	2.21(.03)	-1.43	0.153	Not significant
Teachers	2.27(.03)			

Conclusion and Recommendation

The assessment of the students' and teacher's perceptions revealed that the students were competent in writing the research background and rationale. However, they needed to improve writing the research problem and hypothesis, research design and methods, and report research. The evaluation made by students and research teachers showed no significant difference. Therefore, improving the students' research writing skills is essential by providing them with proper guidance, training, and support. This will help them enhance their writing skills, which will benefit their academic and professional growth in the future.

The research study recommends a multifaceted approach to enhance the research capability of the students. The school should introduce a dedicated research methodology course that covers essential skills

and provide guidance from experienced mentors who can offer support and feedback throughout the research process. Furthermore, ensuring access to diverse research resources, such as libraries, online databases, and academic journals, is essential. Lastly, incorporating research projects into the curriculum across various subjects will provide hands-on experience and allow students to apply research skills in practical contexts, thereby strengthening their research capabilities.

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