Research Skill Level of Grade 12 Students of Penablanca National High School and Their Learning Needs in Practical Research 2: Basis for an Intervention Plan

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Abstract

This study primarily aimed to assess the research skill level of the Grade 12 students of Penablanca National High School. It further identified the respondents' learning needs and formulated an intervention plan for their least mastered competency in Practical Research 2. Descriptive evaluation design was utilized in this study. This study included 200 respondents who are from the Grade 12 Academic tracks of Senior High School –STEM (Science, Technology, Engineering and Mathematics), HUMSS (Humanities and Social Sciences) and GAS (General Academic Strand). Their research outputs were evaluated by teachers teaching English, Statistics and Research subjects. A teacher-made evaluation sheet was constructed in the assessment of the outputs and an equally teacher-made questionnaire was also formulated in the determination of their learning needs. The study showed that respondent's research skill in constructing research titles, problem statement and questionnaires are considerably low. However, their output showed a significantly better result in sampling selection, reviewing related literature and studies and data analysis. As manifested in the findings of the study, the researcher developed an intervention plan to address the respondents' low performance on the cited least mastered competencies.

Keywords: Research Skill, Least Mastered Competency, Intervention Plan, Learning Needs

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Introduction

One of the main academic endeavours covered in the K12 curriculum for Senior High School is research. Students in this new curriculum are introduced to and schooled in the fundamentals of research, including its nature and many types or methodologies. Research is regarded as a crucial talent that every student should have before entering college. Assessing specific competencies in academic endeavours will enable an individual to participate in any institution's initiative or move to develop knowledge and contribute considerably to the nation's advancement.

Research is integral to any learning institution in securing learning goals. An institution's inability to produce and publish high-quality research is a strong indication that higher learning is not supported (Padagas & Hajan, 2020).

Research quality has always been the main concern of every academic institution. In order to promote quality research papers, the research writing process should be considered. As the students' research outputs are crucial, keeping track of their performance is a key ingredient in the quality research papers. As consumers and readers of research, students are valuable sources of information to quality improvements. Students today dread the word research in their academic years. It was reported that students have challenges in writing a full research paper (Tabuena, 2020), and writing issues are due to lack of writing skill and lack of confidence in writing research papers (Wilang et al., 2018).

Senior High School students have 3 research subjects with various competencies required to be performed. Research competencies refer to the skills and performance required by students to conduct research.

Experiences in research conduct also help in improving research competencies and outputs. According to Mallari and Santiago (2013), research competencies comprise of identifying potential sources of research challenges across disciplines. It also includes the formulation of questions, the construction of hypotheses, the assessment of the appropriateness of the scope and boundaries of the research, the use of proper procedures in conducting a review of related literature, and the use of the literature review to improve the research questions and framework. Research competency is an important skill that should be cultivated in all Senior High School students.

This study aims to evaluate and assess the research proficiency levels and least-mastered competencies of grade 12 students of Penablanca National High School. The need for this study was also intended to track and highlight areas of study within the curriculum to provide examples of competencies that teachers and students should concentrate on enhancing.

Statement of the Problem

This study was conducted to assess the research skill level of Grade 12 students in the Academic Track of Peñablanca National High School. It further identifies the least mastered competencies in Practical Research 2.

Specifically it sought to answer the following questions:

1. What is the research skill level of the respondents in terms of the following:
   A. Writing a Title
   B. Formulating a Problem
   C. Reviewing Related Literature and Related Studies
   D. Defining the Sample Size
   E. Designing the Data-Gathering Instruments
   F. Utilizing Appropriate Statistical Tools
   G. Data Presentation
   H. Data Interpretation
   I. Conclusion and Recommendation
   J. Citing Sources

2. What is the least mastered competency of the respondent?

3. What intervention plan can be framed to address the least mastered competencies of Grade 12 students in Academic track?

Scope and Delimitation

This study focused on the evaluation of the research skill level of grade 12 students in the academic track of Peñablanca National High School. It further covered the determination of their least mastered competencies in research and also includes the framing of an intervention plan for the identified learning needs of the respondents so they could improve the conduct of their studies and present a good research output.

This study was delimited to the Grade 12 students enrolled in the academic tracks, STEM (Science, Technology, Engineering and Mathematics), HUMSS (Humanities and Social Sciences), ABM (Accountancy and Business Management), and GAS (General Academic Strand) of Peñablanca National High School. It was conducted during the 1st semester of the School Year 2022-2023.

Research Methodology

Descriptive evaluation design was utilized in this study as it aimed to assess the research skill level of the respondents who are the Grade 12 Academic track students of Peñablanca National. The determination of their learning needs was also done using the same research design by arranging their research skill level from most mastered to least mastered. Least mastered competency was determined by getting the lowest score from the various research skill levels being identified.

The respondents of this study are 200 out of 218 Grade 12 Academic track students of Penablanca National High School who are from ABM, STEM, HUMSS and GAS respectively. They were selected together with their output by using the stratified random sampling selection. 50 research outputs were taken for evaluation with 4 student researchers from each output.

The study was performed by conducting an evaluation on the research papers of the respondents. The researcher crafted an assessment tool used in evaluating the outputs.

The evaluation sheet is composed of 10 research writing skills: writing a title, formulating a problem statement, reviewing related literature and studies, identifying the sample, designing a data-gathering instrument, utilizing appropriate statistical tools, correct presentation of data, precise interpretation of data, making conclusions and recommendations and citing sources and references. A corresponding score was given to each research skill with 10 as the highest and 1 as the lowest.

The statistical procedures utilized in this study were Mean, Frequency Count and Percentage. A 5-point Likert Scale was also employed to determine the respondents' levels on the different research skills performed.

        5-Point Likert Scale
        8.1% – 10.0% = Excellent
        6.1% - 8.0% = Very Satisfactory
        4.1% - 6.0%   = Satisfactory
        2.1% - 4.0%   = Average
        1.0% - 2.0%   = Needs Improvement

Presentation and Interpretation of Data

1. Research Skill Level of Grade 12 Students in Academic Track

Table 1. Research Skill Level of Grade 12 Students in Academic Track

RESEARCH SKILLS	Frequency	Percentage	Mean	Rank	Description
A. Writing a Title	249	83%	8.3	8	Excellent
B. Formulating a Problem Statement	262	82.3%	8.23	9	Excellent
C. Reviewing Related Literature and Studies	275	91.6%	9.16	2	Excellent
D. Selecting the Respondents	280	93.3%	9.3	1	Excellent
E. Designing a Data-gathering Instrument	244	81.3%	8.13	10	Excellent
F. Utilizing Appropriate Statistical Tools	254	84.6%	8.46	7	Excellent
G. Presentation of Data	257	85.6%	8.56	6	Excellent
H. Interpretation of Data	258	86%	8.6	5	Excellent
I. Forming Conclusions and Recommendations	269	89.6%	8.96	4	Excellent
J. Citing Sources	271	90.3	9.03	3	Excellent

The table shows the Research Skill Level of Grade 12 students in the academic track after evaluating their research papers. For the skills that topped the list, 'selecting the respondents/sample' rank first, It implies that the student researchers were able to clearly identify their respondents, that the sampling technique and procedure were addressed, and that the sample size was sufficient and significantly represented the population with 280 frequency and a percentage of 93.3%. 'Reviewing Related Literature and Studies' came in second rank with 275 frequency and a percentage of 91.3 manifesting that reviews conducted are relevant to the current study and are well-arranged and clearly discussed.

In writing a research paper, literature review is an essential part of research writing. As opposed to the findings of this study, Ciocon (2018) suggested that students need further

training or enhancement in order to develop their ability to judge multiple tasks, from finding and evaluating relevant materials to synthesizing information from various sources.

In the third rank was 'citing sources' with a percentage of 90.3. This clearly means that the student researchers were able to document their sources but with a 9.7 difference, there were few who did not fully reference or acknowledge their contributors.

As asserted in the study, Teaching Research Skills in Today's Digital Environment (Purcel et. Al, 2012), it was suggested that the student researchers need to know how to find information and how to judge how appropriate and accurate the material is. They need to be able to assess the biases in their sources. They need to be able to find the material that will help them.

Fourth rank was 'forming conclusions and recommendations.' It shows that student researchers provided accurate conclusions based from their findings and correct suggestions patterned after the conclusions. Conclusions and recommendations are considered to be one of the main parts of research paper because it displays the significance of the study as well as it recommends new ways and solutions to resolve issues and challenges.

On the fifth rank was 'precise interpretation of data which implies that the data are rationally examined, comparable studies were merged to support their study's findings. However, Ciocon's (2018) findings revealed that students in her study find it difficult to accomplish analysis and interpretation of data.

The sixth was 'presentation of data' which suggests that the data are quite thoroughly explained, the graphs and figures are somehow arranged in accordance with the study's goals. The skill in seventh rank was 'using appropriate statistical tools' which was noted that student researchers are bit challenged with statistics and probability. Then followed by the skills, 'writing a title,' 'formulating a problem statement' and lastly was 'formulating a data-gathering instrument.' It was found out that the last 3 skills cited were inter-related. The mentioned difficulties correspond to each other as they all relate to the formulation and construction of the title, problem statement and data-gathering instrument.

The table reveals that the overall Research Skill Level of the students are excellent, however, there are still skills that need to improve after garnering the least result. There were still skills that need to be developed and enhanced in order to generate a quality research paper.

2. The Top 3 Least Mastered Competencies of the Respondents

Table 2: The Top 3 Least Mastered Competencies of the Respondents

Rank	Research Skills	Mean
1	Constructing a Data-Gathering Instrument	8.13
2	Formulating a Problem Statement	8.2
3	Writing a Title	8.3

For the skills that were categorized as least mastered. On the tenth rank was, 'formulating a data-gathering instrument with a percentage of 81.3 followed by 'formulating a problem statement' with 82.3% then 'writing a title' with 83%. Those were the top 3 least mastered skills of the student researchers which shows that they need to improve the crafting and framing of the their questionnaires or any tool they use in gathering the needed data for their

studies. It revealed that the student researchers were unable to fully identify and adequately describe the data gathering instrument that used. Some of the instruments were deemed insignificant for gathering the necessary data, and was also found that some of the questions were unclear and lacking in some areas. It was further found out by teacher evaluators that some questions included in their data-gathering instruments were not in congruence to their objectives. Some questions were in no relation to the title as well as to the objectives of the study.

Bocar (2011) revealed in his study that in conducting a research investigation, the administration of questionnaire and retrieval of the same is a means of gathering the data; nevertheless, visibility and availability of the respondents found to be very difficult for the student-researchers.

Under problem statement formulation, it was noted that student researchers had difficulty constructing their problem statements as questions were not arranged sequentially. Their titles as well were good but some were noted with the use of too many words or stated the title in a sentence form.

The findings of the study is supported by Research Skills Scale for Senior High School Students: Development and Validation by Lacson, (2022), as he discussed the research skill scale of grade 12 students and they found that the Research Methods and Data Analysis and Writing and Reporting Result needs to be enhanced.

These difficulties encountered by the students were not a surprise. According to Bocar (2011), most of the time research work is found to be a tedious and very tiring work to do; however, students cannot get away from this work because most often this is an academic requirement.

3. Intervention Plan for the Least Mastered Competencies

According to the findings of Gilmore and Feldon (2010) and Meerah, et al. (2012), one of the main causes of students' difficulties conducting full research is the lack of preparation in research knowledge and abilities. Hence, the framing of an intervention plan.

Table 3: Intervention Plan for the Least Mastered Competencies

Objective	Program/Activity	Time frame	Persons Involved	Means of Verification	Budget/ Source of Fund
1. Improve students' skills in formulating a good data-gathering instrument	- Present good samples of data-gathering tools like questionnaires and let them analyze its contents and components with the research teacher as facilitator --Research teacher will provide a sample study that he/she can use to demonstrate how to actually make or construct	1 to 2 weeks	Research teacher Students in Practical Research 2	Students' output Activity sheets/ Answer sheets Assessment results	None

	a good data-gathering instrument.				
2. Enhance students' skills in formulating problem statements	- Present good samples of statements of the problem from previous researches and let them analyze its contents and components with the research teacher as the facilitator --Research teacher will provide a sample study that he/she can use to demonstrate how to actually make or construct good problem statements.	1 to 2 weeks	Research teacher Students in Practical Research 2	Students' output Activity sheets/ Answer sheets Assessment results	None
3. Harness students' skills in writing a good research title	- Present samples of research titles and let them analyze if such are good research titles or not. - Explain the components of a good research title by providing research title samples. - Allow them to list down various problems encountered by students in schools that need urgent solutions and ask them to think of a n action research title - Let them think of a program, project or policy in school and ask them about their effectiveness. From there, they will be asked to come up with an evaluation research title. - Allow them to think of some debatable issues in the community and in the country and ask them to come up with a survey title	1 to 2 weeks	Research teacher Students in Practical Research 2	Students' output Activity sheets/ Answer sheets Assessment results	None

Conclusion

In conjunction to the results presented, it is concluded that the overall performance of the respondents in writing a research paper is 'Excellent.' However there are still competencies that need to be improved. It is therefore important for students to focus on the construction of a data-gathering instrument, formulation of problem statements and writing a good research title.

One of the major implications of this research is that the assessment of students' research skill level plays a big role in improving their output and be capable of creating a good research paper.

Recommendations

Since the study showed that the respondents are excellent with their overall research skills, some competencies still need improvement. The researcher prompted to recommend the following:

1. Teachers of research should really focus on teaching the important skills in research so that students become more competent of executing this activity, such as how to construct a valid and reliable data-gathering tool, formulate a statement of the problem patterned after the topic or title and to write a good research title. Teachers must modify their teaching strategies and attitudes when dealing with students in order to maintain a positive approach and allow students to listen and comprehend without difficulty.

2. Furthermore, the school must express its support for student researchers performing a study. Learning materials must provide students with new techniques and learning opportunities that will help them improve their knowledge and overcome constraints and limitations.

3. The recommendations in this study should be used as a guide by the researcher in future educational research.

APPENDIX

EVALUATION TOOL

RESEARCH OUTPUT SCORING RUBRICS

EVALUATOR:	
DATE:	
PRESENTER's GROUP	

Research Writing Skills	Scoring Criteria		
Title	It is simple, brief and striking	**10**	
Problem Statement	The general statement capsulized the main problem stated in the title The specific problems are logical and in sequential order The specific problems jibe with the contents of the research instrument	**10**	
Review of Related Literature and Studies	Reviews are based on the original materials and not on the research abstracts Reviews are relevant to the current study Reviews are well-arranged and clearly discussed	**10**	
Respondents	They are clearly identified The sampling technique and procedure are discussed Sample size is adequate and significantly represents the population	**10**	
Data-gathering Instrument	It is identified and properly described The instrument is significantly enough to get the essential data The questions are clear and complete	**10**	
Statistical Tools	The tools are appropriate for the analysis of data The tool used was clearly identified and explained	**10**	
Presentation of Data	The data are discussed in detail The order of the graphs and figures follow the objectives of the study The data answer the questions posted in the problem statement	**10**	
Interpretation of Data	The data are analyzed logically Related studies are integrated to support the findings and the interpretation	**10**	
Conclusions and Recommendations	They are based from the findings of the study They flow from the conclusions They are relevant and doable	**10**	
References	Sources are properly cited	**10**	
	TOTAL SCORE	**100**	
CRITIQUING SECTION	COMMENTS/FEEDBACKS	SIGNATURE:	

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