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Difficulty in Research Subject: A Case of Teacher Education Students at Laguna State Polytechnic University, Sta Cruz Campus

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Abstract

The study aimed to assess the level of research difficulty of the College of Teacher Education Students in Laguna State Polytechnic University at Sta Cruz Campus as a basis for developing instructional materials in research subject. A mixed method research design was employed in this study wherein descriptive research design was utilized in the quantitative part through weighted mean and standard deviation in assessing their level of research difficulty. Meanwhile, in the qualitative part, students were asked to write their experiences in doing research, their answers were tallied, analyzed, and categorized by theme. Some items in the survey questionnaire were adopted from the research of Morales et al. (2016) and some items were included from the research course syllabus. Participants were selected through purposive sampling. The findings reveal that most of the respondents have a rating of moderately low level of difficulty on almost all items on the self-assessment survey. Students' found high levels of difficulty in searching for relevant literature on the chosen topic of research ($\bar{x} = 3.53$, SD = 0.93), writing a literature review ($\bar{x} = 3.51$, SD = 0.90) and statistical analysis of data ($\bar{x} = 3.43$, SD = 0.98). The implication for the research professor is to consider the results in this study and to develop instructional material for the research subject that fit the needs of the students.

Introduction

Students attending the College of Teacher Education usually enroll in a course titled Methods of Research during their third year level. This subject comprises of pre-oral defense where chapter 1-3 of the manuscript should finish in one semester and for another semester chapter 4 and 5 is covered, and then having their final defense. In writing their manuscript, students were given lectures on how to conduct research specifically in formulating problem, writing literature, formulating conceptual framework and the methodology. A problem, arise since students have difficulty in writing their manuscript as evidence of their delay in submitting the final copy.

Perkin (2007) stressed that educational researchers develop theory of difficulty to identify learners characteristic in trouble spots for a particular area of instruction and include some causal analysis of

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why they occur toward improved teaching and learning. He further emphasized that the most effective response to the recurrent difficulty is to make a causal analysis refined by experiences. Meagher (2017) explained further the theory of difficulty of Perkin stating it is important to master difficult skills and knowledge in order to achieve the next level of performance. The Theory of Difficulty (TOD) is supposed to help teachers-in-training to develop a better curriculum for learning that skill/knowledge. In this context, the nature of this study was to analyze the students' level of difficulty for each category in methods of research subject and eventually find out the cause of the difficulty.

Future educators must become good researchers to enhance and widen their knowledge and skills in the various pedagogical approaches. Through research, future teachers can expand their knowledge in theory and be able to link it to practice (Katsarou & Tsafos, 2013). As cited in Walkington (2015), emphasized that the term "students as researchers" is an active pedagogy that focuses on the process of research and inquiry. This includes research-teaching linkages, teaching-learning approaches in the research process, using assignments with elements of the research process, and providing students a first-hand experience of research-based consultancy. Hence, students should possess necessary skills in conducting different approaches, designs and methods in research.

Council for Undergraduate Research as cited by Oolbekkink-Marchand, Oosterheert, Lubberink, & Denessen (2022) defines undergraduate research to be any "inquiry or investigation conducted by an undergraduate student that makes an original, intellectual, or creative contribution to the discipline." On the other hand, Healey and Jenkins (2009) stated that undergraduate research should aim to (a) cultivate awareness of research careers (b) train students in research skills for employment and, (c) sustain the advantages of a research-teaching connection in a mass or universal system. Further, they pointed out that students learn and can be assessed in ways that come as close as possible to the experience of academic staff carrying out their disciplinary research. Meanwhile, Sumbawati and Anistyasari (2018) stated that undergraduate research should have the opportunity for the students to produce knowledge invention and dissemination in a specific field. Hence, these research process experiences have a great impact on the student's future professional services (Petrella & Jung, 2008) thereby faculty members at teaching institutions should enhance their students' learning experiences (Gacrama & Baptista, 2019; Postholm, 2009). Pearce, Brock, and Bunch (2022) posit that it is a responsibility of faculty members in higher education to provide learning experiences. In addition, Guilbert, Lane, and Van Bergen (2015) concluded that, in promoting educational research in the undergraduate level, the University may determine and provide the type of support and guidance the students' needs.

Research as a subject in the undergraduate program of the College of Teacher Education in the Philippines is included in its curriculum per major area as per CHED memorandum. Table 1 shows the programs offered in teacher education with specific CHED memorandum order.

Table 1 Programs offered in LSPU-College of Teacher Education with respective CHED memorandum order

Program	Memorandum Number	Subject Title
Bachelor of Secondary Education	CMO no. 75 s 2017	Science: Research in teaching Science 1 & 2 Research in Mathematics Language Education Research Methods of Research
Bachelor of Elementary Education	CMO no 74 s of 2017	Research in Education
Bachelor of Technology and Livelihood Education	CMO 78 s 2017	Research 1: Methods of research Research 2: Undergraduate thesis/research paper/research project
BTVTEd	CMO no.79 s of 2017	Technology Research 1: Methods of research Technology Research 2: Undergraduate thesis/research paper/research project
BPEd	CMO no. 80 s 2017	Research

Source: Commission of Higher Education (2017)

Upon evaluating the description of the research subject per major, it shows that its content focuses on the pedagogy, issues, and problems specific to its major. This research aimed to determine the students' difficulty level in each phase in the undergraduate research subject. Students in the College of Teacher Education rate themselves (self-assessment) on the degree of difficulty they encountered during senior high school for each research phase (from formulating problems up to the presentation of the finished research output). Tillema (2010) posits that giving self-assessment is tantamount to self-reflection which involves reflective activities and analysis of one's work thus, deploying self-assessment

gains insights that can be used for further learning. This is further elaborated by Tigelaar and Tartwijk (2010) when they emphasized that self-assessment may lead to new insights or awareness of areas that need to be improved and may help prospective teachers to exert more control and responsibility for their professional development.

This study was undertaken to determine the level of research difficulty of students attending the College of Teacher Education at LSPU Sta Cruz Campus as well as to investigate student's experiences in conducting research. Investigating the most commonly difficult part of research that the undergraduate students experience can aid the research professor in teacher education to strategize their teaching, and to create the baseline in making an instructional material focusing on the topics that the students find difficult. The study was conducted during the years 2021-2022 when students had flexible learning or mostly attended online classes due to the COVID-19 pandemic.

Objectives

This study aimed to assess the level of students difficulty in research subjects, specifically it sought to answer the following questions:

1. What is the level of student's difficulty in the research subject?
2. What specific topic/s in research do students' find difficult most?
3. What are the themes of undergraduate students description of their experience in conducting research?

Conceptual framework

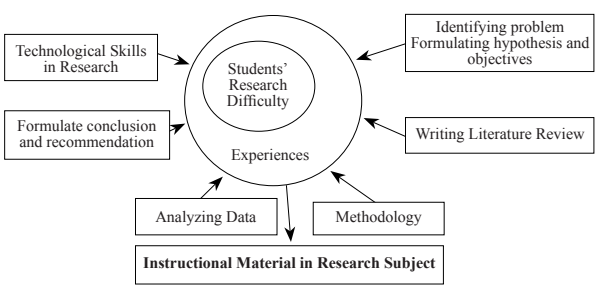

Figure 1 Conceptual framework

The framework shows the difficulty of students in various topics in the research subject. Their research experiences were also explored in order to develop an instructional, material in research subject.

Research methodology

1. Research design

A mixed method research design was employed in the study. Mixed methods systematically integrate quantitative and qualitative approaches to research in order to answer research questions. (Tashakkori & Newman, 2010).

In the quantitative part, the researcher employed descriptive research design wherein weighted mean and standard deviation were utilized in the study. While in qualitative part, a thematic analysis was employed wherein the written answers of the students were analyzed and categorized by theme.

2. Research instrument

The research instrument was adopted from two sources, Part 1 consisted of items on research difficulty which were derived from the research of Morales et al. (2016) and Silvia Albareda-Tiana et al., while some were extracted from the research course syllabus. Item numbers 1 to 5 are usually found in chapter 1 of the thesis which consists of identifying problems, formulating of problems, objectives and hypothesis. In addition, item numbers 6 and 7 were about literature which can be seen in chapter 2 of the thesis. While item numbers 8 and 9 were about the methodology that can be found in in chapter 3. Then item numbers 10 to 13 were about writing chapter 4 of the manuscript which consist of interpretation and organizing of findings. The item numbers 14-15 were about chapter 5 of the manuscript which is about writing conclusion and recommendation. There were additional items in the survey questionnaire about knowledge in using technology in literature searching, in presenting and analyzing data and entering bibliography. The items were rated by the respondents on how they assessed themselves on the degree of difficulty they encountered in each phase of research. Only the weighted mean and standard deviation were utilized in the study. The items were rated on the following scale; 1.00-1.79 no difficulty; 1.80-2.59 low level of difficulty; 2.60-3.39 moderate-low level of difficulty; 3.40-4.19 high level of difficulty; 4.20-5.00 an extreme level of difficulty

Part two of the survey asked students to write about their experiences during their senior year in high school when they conducted research. Their answers were analyzed and categorized by theme. The survey questionnaire was translated via Google Forms before being distributed to the target participants.

Pilot test on the questionnaire was conducted to prevent the occurrence of a fatal flaw in a study that is costly in time and money (Polit & Beck, 2017). This will enable the researchers to evaluate the adequacy of the researchers' planned methods and procedures and able to make the necessary modifications before the study is implemented. The questionnaire was subjected to reliability test which had a Cronbach alpha result of 0.8 reliability.

3. Research participants

Purposive sampling was utilized in the study focused on all third year level students as particpants. Third year level participants were selected because they attend the research subject at that time. The College of Teacher Education in LSPU have four programs such as Bachelor of Secondary Education (BSED), Bachelor of Elementary Education (BEED), Bachelor of Physical Education (BPEd) and Bachelor of Technology and Livelihood Education/Vocational Education (BTLEd/ BTVTEd). BSED consisted of different majors such as Mathematics, Science, Filipino, English, and Social Studies. The total population of third year students was two hundred seventy but only 173 responded to the survey. Table 1 below presents the representation of participants that responded to the survey.

Table 2 Number of students participated in the study

Program/Major	Number
Mathematics	37
Science	23
Filipino	34
Physical Education	30
BTLEd/ BVTEd	21
Elementary	29
Total	**173**

4. Data Collection

Each group of respondents have their assigned adviser wherein they had a group chat (GC), the GC served as the platform to make announcements, reminders or send documents concerning school matters. The researcher asked permission to their respective adviser to send the survey questionnaire translated in Google Forms through their GC so that the students may access the form and be able to respond to it. Information about confidentiality and anonymity was indicated in the Google Forms.

5. Data analysis

The study utilized weighted mean and standard deviation for the quantitative part of the study to obtain the level of research difficulty for each category. For the qualitative part, the research used thematic analysis to describe their experiences in conducting research.

Results

Students' level of research difficulty

Table 2 presents the level of difficulty of the students on each topic in research. As reflected in the data, most of the respondents showed a rating of moderately low level of difficulty on almost all items on the self-assessment survey such as items number 1 to 5, 8 to 10, and 12 to 16.

Table 3 Level of difficulty in research

Item	WM	S.D.	Verbal Interpretation
1. Identifying issues and problems to be investigated	3.08	0.82	MLD
2. Formulation of problem	3.09	0.77	MLD
3. Differentiation of research question from hypothesis	2.89	0.77	MLD
4. Formulation of objective	2.87	0.82	MLD
5. Formulation of hypothesis	2.77	0.89	MLD
6. Searching for relevant literature to my chosen topic of research	3.53	0.93	HLD
7. Writing literature review	3.51	0.90	HLD
8. Developing the process of how to do research and collect evidence	3.26	0.83	MLD
9. Selecting appropriate methods and techniques for the processing of data	3.25	0.85	MLD
10. Interpreting and analyzing quantitative data	3.40	0.89	MLD
11. Interpreting analyzing qualitative data	3.17	0.85	HLD
12. Organizing and writing the findings	2.92	0.83	MLD
13. Using original information in order to construct new concepts and insights	3.07	0.85	MLD
14. Formulate Conclusion	2.84	0.75	MLD
15. Formulate recommendations	2.76	0.80	MLD
16. Using technology in … a. Literature search	2.83	0.96	MLD
b. Data presentation	2.80	0.84	MLD
c. Statistical analysis	3.12	0.98	HLD
d. Bibliographical entries	2.69	0.89	MLD

Legend: 1.00 - 1.79 no difficulty; 1.80 - 2.59 low level of difficulty; 2.60 - 3.39 moderate - low; 3.40 - 4.19 high level of difficulty; level of difficulty; 4.20 - 5.00 an extreme level of difficulty

On the other hand, students found it highly difficult in searching for relevant literature on the chosen topic of research, $\bar{x} = 3.53$, SD = 0.93 in writing a literature review, $\bar{x} = 3.51$, SD = 0.90 and analyzing quantitative data, $\bar{x} = 3.43$, SD = 0.85. One of the concepts that students found less difficult as compared with other statements is the use of technology in bibliographical entries, $\bar{x} = 2.69$, SD = 0.89 that can be attributed to their being digitally native. Formulation of hypothesis, $\bar{x} = 2.77$, SD = 0.87; using technology in literature search, $\bar{x} = 2.83$, SD = 0.96; formulation of

objectives, $\bar{x} = 2.84$, SD = 0.82; and formulating a recommendation, $\bar{x} = 2.76$, SD = 0.80.

Students' experiences in conducting research

Part two of the questionnaire was a question of their experiences in conducting research during their senior high school experience. Upon counting the frequency of the responses on the difficulty, out of 173 respondents, 113 of them wrote that conducting research was difficult. Further analyzing their responses, students wrote their reasons on why it was difficult. This is grouped and categorized by theme and ranked as reflected in Table 4

Table 4 Reasons for difficulty

Rank	Research difficulty
First	Literature
Second	Groupmate
Third	Financial
Fourth	Analyzing Results
Fifth	Statistical Tool
Sixth	Time

Discussion

Most of the respondents found it difficult regarding the search for relevant data aligned with their topic. Although literature is widely available on the internet, analyzing and evaluating the content of the literature proved difficult for the respondents. Literature needs thorough understanding and systematic review before evaluating. This finding is validated by the students' response when asked about their experience in conducting research during their senior year in high school, one of the most common response of the participants was searching relevant literature. Below are some answers of the respondents, transcribed verbatim.

"In conducting research we have experienced some difficulties especially in searching for related literature and studies because almost related literature and studies on the internet that we found are not updated."

"One of the problems I've encountered is finding a updated literature that would be relevant enough for the study."

"Too much information in the internet find me more difficulty in searching relevant readings in my topics."

The result was verified with the study of Tan (2007), he depicts that those students had difficulty in searching relevant literature because of confusion in categorizing and synthesizing literatures. Writing a literature review is another students' difficulty since not all of them have skills in writing. This may be attributed to the students' lack of training in writing literature review. This could also be attributed with the lack of trainings and research skills of their senior high school teachers (Tolentino, 2021) when they took their research subjects in senior high school. Examples of students' responses are as follows.

"To put what you read into writing is somewhat difficult especially when it comes to paraphrasing."

"It took me a longer time to write the literature because it is hard to organize thoughts."

"In doing research paper when I'm in senior high I experience more challenging in writing and getting information in different resources such as online, books, people."

The next item that the respondents found a high level of difficulty was analyzing data, $\bar{x} = 3.43$, S.D. = 0.85. Below are examples of student's responses.

"When I was in Senior High, we chose to conduct a qualitative research because we think that quantitative is much harder than qualitative. This is the first time I experienced research and it is hard for me to understand some things in conducting the research. And as I go through to the conduct of our research, I found out that analyzing qualitative data is kind of difficult."

"We had a hard time analyzing the result but we were quick to do the survey because the class was face to face."

"Happy but sometimes I feel confuse to analyze it."

Some respondents found it difficult in analyzing the results of the data maybe because this is the part that is not fully explained in the discussion of the lesson. Students have so much to tackle and assigned tasked to accomplish as reflected in the course syllabus and it seems that the topics are congested in one semester only.

Writing literature and analyzing data were the two items that respondents found difficult in both quantitative and qualitative part of the research. However, there are items that emerged from the qualitative result that are not included in the quantitative items, and these are; groupmate, financial, statistical tool, and time.

One of the respondents stated that, during their senior high, they had partners when they did research or the process of conducting research was by group, some of the respondents found it hard to collaborate with their groupmates because of their different ideas and location.

"It's hard to make research because some of my group mates didn't participate."

Some students are struggling with financial aspects, since doing research requires a lot of processes, it does not only involve time and effort but money as well. Garingan (2019) confirmed this through her findings in her study that research activity is not attractive for students due to big time expenditures. Some of the respondents said that they don't have laptops to use in conducting research, they had to go to a computer shop and borrow laptops from others. One of the responses of the student.

"Difficult and expensive."

Finding the right statistical tool was the next topic that students found difficult, possible explanation for this is that, no statistics subject is included in the curriculum and it might not be discussed during the Research Course. The research professor cannot be blamed because the topics and tasks in research are too congested.

Some of students said that they lack time in conducting research, there are also activities other than research that they must do. In addition, managing time may be a problem.

"For me it's not easy because we don't have enough time to find some data to our topic."

The findings in this study made clear that although respondents already took a research subject during their senior year in high school, they still found research was not an easy subject. It also brings up the question that may be the research teacher during their senior year in high school and also their research professors during college level did not give enough attention in discussing the literature review and analyzing data. This study offers a convincing justification that research professors should take into consideration and to conduct a pre-assessment at the beginning of the course to identify what particular concepts are difficult for the students. This would offer a better way to understand the students' needs. In addition, it provides guidance for the research professors to develop instructional material fitted to the students' needs.

Suggestions

This research offers suggestions that professors and instructors in higher education may do a lot of activities about writing literature review and analyzing data quantitatively and qualitatively as what had transpired in the findings. Another thing is that the research professors should make a pre-assessment for the subject before the beginning of the class. In this way research teachers/professors could make a necessary plans and adjustment for the subject, focusing on the topics most needed by the students.

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