

## Science Education Graduates' Difficulties in Conducting Undergraduate Research

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### Abstract

The researcher's role is shaping policies and communicating with the public. The purpose of this study is to enlighten the students who have difficulties in conducting their own research. The study involved 20 SEGs. Comprehensive sampling was implemented. Data gathering done online. Findings revealed that among the five phases, Phase 2 (proposal writing) and Phase 4 (data analysis and interpretation) were considered difficult for the graduates wherein a significant difference when respondents are grouped according to specialization. Thematic analysis was done to treat the qualitative data. Three themes emerged in the category, other difficulties experienced. These include research- related difficulties; respondent- related difficulties; and advisee and adviser-related difficulties. As to suggestions to overcome the difficulties, three themes were generated [1]. observance of time management [2], use of cognitive approach in research; and [3] establishment of good communication between advisee and adviser. The study concluded that the SEGs faced difficulty in the five phases. The study recommends a workshop which accentuates conceptualization, techniques in reviewing related literature, and analyzing data may be spearheaded by the college. Finally, advisee-adviser mentoring program may be institutionalized to produce high quality researches geared towards improving teacher education in the country.

**Keywords:** Difficulties in Research; Research; Science education graduates

### Introduction

Researches roles amidst global crisis is forming policies with the intention to share with the community (Sakellaropoulou, 2020) It is crucial. It saves lives (Murdoch, 2020). The ground breaking discoveries, significant results and essential studies have become a foundation for future breakthrough in research and development. It has proved to be one of the essentials in the academe. According to Thondhlana, Mawere, & Weda. [4], not being able to submit research on a given due date means that the aspiring graduates will fail to be awarded the degree qualifications by the institution. However, the main barriers for students to conduct research is the unfamiliarity with research, its methods, literature reviewing and citations. There are also other factors including economic, cultural, social and organizational have negative status relative to researching (Ashrafi-rizi et al. [5]). Research, is a stretching assignment needs a comprehensive understanding on the subject matter, planning, care, and hard work [Qasem & Zayid. 6]. Along with the process are the difficulties that

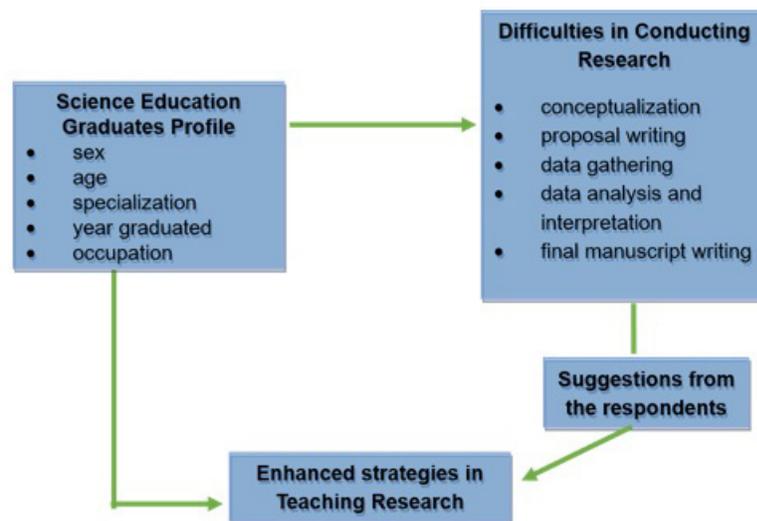
may arise. Higher education has vital role in a knowledge-based society, imparting it to learners and promoting modernization. Research-based education has been an inclining interest among researchers in higher education (Eid, 7). It is a preparation for more researches, especially action research, commonly when a pre-service teacher enters in Department of Education (DepEd). National Academy of Sciences, National Academy of Engineering, and Institute of Medicine (2009) The advantages or hazards of contemporary knowledge and technologies could be broadly assessed by researchers. With the purpose of gaining insights in teaching and learning, teachers intentionally and systematically undertake teacher research. It makes them more reflective practitioners, affecting a positive outcome to the students, educational system in the classroom and school (Henderson, Meier, Perry & Stremmel, 2012). Huston as cited in O'Leary (2017) argued that research is poking and prying with a purpose. Conducting research requires being persistent in order to find out and reveal the answers. Word research is simple but when applied in action, most of the time it is revealed to be taxing and exhausting to do (Bocar, 2013). The inevitability of unexpected difficulties and problems are assured to experience (Trimmer as cited in Bocar, 2013). There are common challenges in conducting research, it includes; choosing the right topic and methodology, finding study participants. Determining these can grasp a better understanding of the struggles experienced by the science education graduates who conducted undergraduate

research.

The purpose of this study is to enlighten the students who have difficulties in conducting their own research. As for teachers who will be handling a research subject in the future, this will also be an eye-opener and a guide on which part of the research process must focus on. This will serve as the baseline for the future researchers in knowing what could be the possible difficulties that they will encounter in the future and to prevent from experiencing these difficulties. The study will identify the difficulties experience by the Science education graduates (SEGs) in conducting undergraduate research.

### Conceptual Framework

The conceptual framework comprised of four boxes and arrows that are related to each box (Figure 1). Each of the following boxes consisted of different data that supported the research. The first box includes the Science Education Graduates (SEG) profile such as sex, age, specialization, year graduated, and occupation of the respondents. The next box, which is pointed by the arrow to the right, contains difficulties in conducting undergraduate research in terms of conceptualization, proposal writing, data gathering, and final manuscript writing. In the next box, pointed by the arrow from the bottom of the second box, are the suggestions by the respondents in the open-ended questions. This serves as the basis in enhancing the strategies in teaching method, which is the last box.



**Figure 1:** Research Paradigm.

### Methods

The study used mixed-method research design with survey questionnaires as the main instrument in gathering data. It utilized comprehensive sampling with a 23 Science Education Graduates served as participants. The instrument is composed of three parts: demographic profile of the respondents; assessment of difficulties;

and open-ended questions. Significant ANOVA was implemented to treat the quantitative data. Meanwhile, thematic analysis was utilizing to treat the qualitative data.

### Findings and Discussion

Profile of the Science Education Graduates Age. As shown in (Table 3), both age brackets 18-20 and 24 and above got the least

number of respondents that is 1 or 5% while age bracket 21-23 got the highest percentage which is 18 or 90%. It means that most of the respondents are currently at the age of 21-23. Sex. The number of males were higher than the number of females. It makes up 55% of the respondents. Civil Status. All the 20 respondents or 100% claimed that they are still single it shows that they not still committed in marital relationship. Specialization. Out of 20 respondents,

13 or 65% took biological science major and it is higher compared to physical science major with 7 or 35%. It shows that there are more biological science major graduates than physical science major graduates. Occupation. As shown, out of 20 respondents 16 or 80% are currently working and 4 or 20 % are not currently working. It reveals that science graduates were immediately got to work after their graduation.

**Table 1:** Frequency and Percent Distribution of the Profile of the Respondents

	Profile	Frequency	Percent
<b>Age</b>	18-20	1	5
	21-23	18	90
	24-above	1	5
<b>Sex</b>	Male	11	55
	Female	9	45
<b>Civil Status</b>	Single	20	100
<b>Specialization</b>	Biological Science	13	65
	Physical Science	7	35
<b>Occupation</b>	Available	16	80
	Not Available	4	20

**Table 2:** Difficulties in Conducting Research in Phase 1 Research Conceptualization

Aspect	Mean	SD	VD
1. Choosing a topic	3.05	0.76	D
2. Formulating a title	2.85	0.81	D
3. Formulating research objectives	2.75	0.64	D
4. Identifying research problems	2.7	0.8	D
<b>Mean</b>	<b>2.84</b>	<b>0.08</b>	<b>D</b>

**Table 3:** Difficulties in Conducting Research in Phase 2 Proposal Writing

Aspect	Mean	SD	VD
1. Writing the background of the study	2.8	0.62	D
2. Reviewing related literature	2.9	0.91	D
3. Developing the research frameworks	2.6	0.75	D
4. Following the correct citation format	2.1	0.85	QD
5. Following the proper reference format	2.15	0.75	QD
6. Selecting research design	2.45	0.76	QD
7. Choosing sampling technique	2.25	0.64	QD
8. Designing data gathering procedure	2.35	0.67	QD
9. Selecting data analysis tools	2.65	0.59	D
10. Designing research instrument	2.35	0.88	QD
11. Validation of research instrument	2.25	0.83	QD
<b>Mean</b>	<b>2.46</b>	<b>0.76</b>	<b>QD</b>

**Difficulties in Conducting Research:** Phase 1 Research Conceptualization. (Table 4) shows the difficulties in conducting research in Phase 1 research conceptualization.

As presented in (Table 4) majority of science graduates found research conceptualization difficult (D) for them. Aspect 1 “choosing a topic” got the highest mean of 3.05 and standard deviation of 0.76 that interpreted as difficult (D) among the 4 aspects. Sharp,

Peters, and Howard (2002) stated that the research is not in progress if the topic has not been selected. This is anchored in the result, it means that mostly, choosing topic for science graduates gave them a hard time when they still taking the research course. The researcher cannot proceed to the next step if the topic is not decided. While aspect 4 “identifying research problems” got the lowest mean with 2.70 that has a verbal description of difficult

(D). The remaining aspects are aspect 2 “formulating a title” with a mean of 2.85 (sd = 0.81) and aspect 3 “formulating research objectives with a mean of 2.75 (sd=0.64). Overall Phase 1 Research Conceptualization has a grand mean of 2.84 and it interpreted as difficult (D) for the science graduates of President Ramon Mag-saysay State University. All in research conceptualization is very significant in the process of researching because the flow of the research depends on the conceptualized subject matter.

**Phase 2 Proposal Writing:** As shown in (Table 5), among the 11 aspects in phase 2 Proposal Writing aspect 2 “reviewing related literature” got the highest mean with 2.90 that interpreted as difficult (D), while the lowest mean is the aspect 4 “following the correct citation format with a mean 2.10 that translated as quite difficult (QD) in verbal description. To sum up the phase 2, science graduates find proposal writing with a grand mean of 2.46 quite difficult (QD). The participants found following proper format in citation difficult. It was also emphasized in a study that citation is vital in academic writing but particularly challenging for novice writers who use English as a second or foreign language (Jomaa &

Bidin, 2017). Psychological and personal problems are the main barriers when writing a research proposal (Suyadi, Husnaini and Elvina, 2020).

**Phase 3 Data Gathering:** As presented in (Table 6) in phase 3 data gathering, though the overall mean is 2.16 interpreted as quite difficult (QD), for the science graduates’ aspect 1 “asking permission of the school principals or person involved” and step 3 “seeking availability of the respondents” are got the highest mean of 2.25 with a verbal description of quite difficult (QD). While aspect 2 “asking permission of the respondents” got the lowest mean of 2 that translated as quite difficult (QD) in terms of verbal description. In the study Taskeen et al. (2014), it emphasized that in data gathering, researchers find data collection difficult because researchers need to collect data from various source. Researcher cannot only rely on one or two sources; therefore, they should meet the number of the targeted respondents. However, getting access to the respondents is not easy especially if the target population or sample drops-out. Taskeen et al. (2014) also stated that when the sample changes, the result of the study changes as well.

**Table 4:** Difficulties in Conducting Research in Phase 3 Data Gathering

Aspect	Mean	SD	VD
1. Asking permission of the School principals or person involved	2.25	0.72	QD
2. Asking permission of the respondents	2	0.79	QD
3. Seeking availability of the respondents	2.25	0.79	QD
4. Securing the informed consent from the respondents	2.2	0.77	QD
5. Conducting of the experiment or survey	2.1	0.85	QD
<b>Mean</b>	<b>2.16</b>	<b>0.78</b>	<b>QD</b>

**Table 5:** Difficulties in Conducting Research in Phase 4 Data Analysis and Interpretation

	Aspect	Mean	SD	VD
1	Sorting the data gathered	2.35	1.09	QD
2	Tabulating the data	2.5	1	D
3	Using of statistical software	2.9	0.72	D
4	Computing statistical measures	3.3	0.57	D
5	Analyzing the data	3	0.65	D
6	Interpreting the data gathered	2.95	0.69	D
<b>Mean</b>		<b>2.83</b>	<b>0.79</b>	<b>D</b>

**Table 6:** Difficulties in Conducting Research in Phase 5 Final Manuscript Writing

Aspect	Mean	SD	VD
1. Consulting with the adviser	2.05	1.1	QD
2. Writing the results and discussion	2.65	0.88	D
3. Writing the summary, conclusions and recommendations	2.55	1.05	D
4. Writing the abstract	2.6	1.19	D
5. Preparing the table of contents	2.1	1.12	QD
<b>Mean</b>	<b>2.39</b>	<b>1.07</b>	<b>QD</b>

**Table 7:** Summary of the Respondent’s Difficulties in Research Writing Phases

Research Phase	Grand Mean	SD	VD
1. Research Conceptualization	2.84	0.08	D
2. Proposal Writing	2.46	0.76	QD
3. Data Gathering	2.16	0.78	QD
4. Data Analysis and Interpretation	2.83	0.79	D
5. Final Manuscript Writing	2.39	1.07	QD
<b>Mean</b>	<b>2.54</b>	<b>0.37</b>	<b>D</b>

Phase 4 Data Analysis and Interpretation. As presented, there are 6 aspects involved in phase 4 wherein aspect 4 “computing statistical measures” got the highest mean of 3.3 with a verbal description of difficult (D) while the lowest mean is aspect 1 “sorting the data gathered” with a computed mean of 2.35 interpreted as quite difficult (QD).

Based from the results, computation of statistics is difficult. But it is extremely significant component in drawing the conclusion of a study. Designating an appropriate statistical test to treat results is important in interpreting and analyzing the validity of the study and focusing on defining the study variables (Kim et al., 2017)

Overall, the grand mean is 2.83 with a verbal description of moderately difficult (MD). This is supported in the study of Komba (2016), 63% of 103 reviewed paper did not analyze the data adequately. Mostly it is only presented through papers though the finding did not explain clearly.

**Phase 5 Final Manuscript Writing:** Among the 5 aspects involved, aspect 2 “writing the results and discussions got the highest mean of 2.65 with a verbal description of difficult (D), while the aspect 1 “consulting with the adviser” got the lowest mean of 2.05 that interpreted as quite difficult (QD). Overall, grand mean for phase 5 is 2.39 that has a verbal description of quite difficult (QD). Commonly research is done by surveying, in a survey analysis Kulzy and Fricker (n.d) said that, “this is an art as it is a science where in when the final stage come the art shines.” In this process all the analyzed and interpret will finally revealed the recommendation that will help commonly in improving or developing program that can help the society. Summary of the Research Phase. Table 9 shows the summary of the five (5) research phases. Among these, research conceptualization got the highest grand mean of 2.84 (sd=0.08) and interpreted as difficult (D). It is followed by data analysis and interpretation with a grand mean of 2.83 (sd=0.79) with an interpretation of difficult (D). The lowest grand mean is data gathering with 2.16, standard deviation of 0.78 and interpretation of quite difficult (QD). It is evident that for the science education graduates phase 1 research conceptualization is the most difficult followed by phase 4 data analysis and interpretation while the least difficult is the phase 3 data gathering.

**Phase 1 Research Conceptualization:** Age. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to age at the 0.05 level [F=.001, p=.979].

Sex. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to sex at the 0.05 level [F=.266 p=612].

Specialization. Based from the result, there is significant difference in the difficulties in conducting research in terms of data anal-

ysis and interpretation according to specialization at the 0.05 level [F=.048, p=.829].

Occupation. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to occupation at the 0.05 level [F=2.447, p=.133].

It is evident that despite of the profiles of the science education graduates (SEGs) of President Ramon Magsaysay State University of San Marcelino campus there is no significant difference in the difficulties they experience in conducting their undergraduate research. The result has the similarity in the study of Bocar (2013), in verbal interpretation the research conceptualization which includes constructing research title showed very great extent meaning for the researchers is very difficult to do, still there is no relationship when it comes to the profile of the 14 respondents in her study.

**Phase 2 Proposal Writing:** Age. Based from the result, there is no significant difference in the difficulties in conducting research in terms of proposal writing according to age at the 0.05 level [F=.223, p=.802]

Sex. Based from the result, there is no significant difference in the difficulties in conducting research in terms of proposal writing according to sex at the 0.05 level [F=.022, p=.885].

Specialization. Based from the result, there is significant difference in the difficulties in conducting research in terms of proposal writing according to specialization at the 0.05 level [F=6.824, p=.018].

Occupation. Based from the result, there is no significant difference in the difficulties in conducting research in terms of proposal writing according to occupation at the 0.05 level [F=.403, p=.534]. (Table 7) Among the five (5) profile variables stated, specialization is the only variable where the null hypothesis is rejected. It means that this has a great factor for the science education graduates (SEG) in proposal writing. It is clearly stated that the respondents were science education graduates in a sense that these respondents took up the educational program. In the study of Tan (2007) she emphasized that students were challenged in reviewing many researches and journals in lined in their interest and specialization. Also in the case study done by Healey and Jenkins (2009), they stated that having undergraduate research and inquiry in education department have a great benefit not just in the department but as well as in the students.

**Phase 3 Data Gathering:** Age. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data gathering according to age at the 0.05 level [F=.556, p=.584]. Sex. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data

gathering according to sex at the 0.05 level [ $F=.054$ ,  $p=.819$ ]. Specialization. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data gathering according to specialization at the 0.05 level [ $F=1.435$ ,  $p=.246$ ]. Occupation. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data gathering according to occupation at the 0.05 level [ $F=.1433$ ,  $p=.247$ ].

Despite the difficulty, profile variables are not important to the outcomes of the phase 3 data gathering. However, there are still problems in the data gathering, in the analysis of Bocar (2013), approaching the respondents still has a great factor in collecting the data. The researcher needs to follow the ethical standards to speak and convince the unfamiliar respondents to answer the questionnaires. As stated by Morrow (2009), “research ethics exist to ensure that the principles of justice, respect and avoid harm by using agreed standards” this means that the target respondents or participants in a certain research have the right to decline and the researcher will honor their decision.

**Phase 4 Data Analysis and Interpretation:** Age. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to age at the 0.05 level [ $F=.090$ ,  $p=.915$ ]. Sex. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to sex at the 0.05 level [ $F=.073$ ,  $p=.790$ ]. Specialization. Based from the result, there is significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to specialization at the 0.05 level [ $F=17.266$ ,  $p=.001$ ]. Occupation. Based from the result, there is no significant difference in the difficulties in conducting research in terms of data analysis and interpretation according to occupation at the 0.05 level [ $F=.271$ ,  $p=.609$ ]. Among the profile variables stated, specialization are the variables where the null hypothesis is rejected. This means that these variables affect the quality of the science education graduates’ papers. According to Glancy, Moore, Guzey, & Smith (2017), learning the concepts in context of applying of data analysis and statistics is difficult. Knowledge about statistics was not enough due to its not the part of the major subjects in science specialization in teacher education, unless the researcher is specialized in mathematics. The study of Komba (2016), result shows that 20% of 103 had discussed shortly the analyses and interpretations part of the research due to the very poor English language. Though the result is lower still it has a factor contributed in the respondent’s difficulties.

**Phase 5 Final Manuscript Writing:** Age. Based from the result, there is no significant difference in the difficulties in conducting research in terms of final manuscript writing according to age at the 0.05 level [ $F=.765$ ,  $p=.481$ ]. Sex. Based from the result, there is no

significant difference in the difficulties in conducting research in terms of final manuscript writing according to sex at the 0.05 level [ $F=.072$ ,  $p=.792$ ]. Specialization. Based from the result, there is no significant difference in the difficulties in conducting research in terms of final manuscript writing according to specialization at the 0.05 level [ $F=2.603$ ,  $p=.124$ ]. Occupation. Based from the result, there is no significant difference in the difficulties in conducting research in terms of final manuscript writing according to occupation at the 0.05 level [ $F=1.332$ ,  $p=.264$ ]. It is clear that all the variables included in the analysis of data are no effect in the final manuscript writing. Regardless the profile a researcher can finish the manuscript. But still not considering the profiles the validity and quality of the written final report must be put in consideration (Earley, 2007). In 103 respondents, 39% claimed that they were knowledgeable on the difference between summary and conclusion of the study.

### Other Difficulties Personally Perceived

Table 8 shows the three (3) themes generated from other difficulties experienced by science education graduates. The sample statements and corresponding frequencies are given to each theme. The following are the further explanation on each themes and their subthemes.

**Subtheme 1.1: Searching:** Related literature has a greater role in research paper. Based on the book published by Sharp et al. (2002) the reason in scanning the literature is for the process of topic selection. In the statement given by SEG 19 “Reading and writing RRL.” It is clearly emphasized that he/she had the difficulty in seeking literature. Through reviewing related literature, the researcher can check if the proposed topic is already tackled by other researcher. The researcher will find out the differences and new to his/her proposed topic. Also related literature helps to support the arguments throughout writing the whole research. In the study of Komba (2016) 69% of 103 did not critically present literature review, it is proven that searching literature has a bigger effect in writing the paper, if the literature is not appropriate for the arguments stated the validity of the texts will not account as valid.

**Subtheme 1.2: Revising of Manuscript:** Panels normally consist of one external examiner and one internal examiner, and an independent chair (Postgraduate research degrees - guidelines for examiners, n.d). In defense, panelists gave suggestions in improving the paper. Respondents find it helpful at the same time difficult in choosing what should suggestions they must follow. Most of the time panelist came up with the same suggestions. But SEG 6 encountered a different suggestion from the panelists. It made confusion for the respondent and it affects a little in revising the manuscript.

**Subtheme 1.3: Use of Second Language in Writing:** English is the universal language but for Filipinos there are times that they

cannot assure that the medium will translate accurately. In the statement of SEG 8 there is a difficulty when it comes in translating the gathered data into English. As expressed by Rubinstein-Avila (2007), “translation does not ensure that the survey will convey the same pragmatic meaning.” In a sense researcher cannot translate exactly the message of the original texts.

**Subtheme 1.4: Financial difficulty:** In conducting research, the researcher need time allotment as well as money to continue it. Although in the statement of respondent 7 her statement is about printing manuscript. Before the respondent achieved the final printing of manuscript she needs to print more hardcopies to check carefully if there are errors. This is the same in the study of Mafa & Mapolisa (2012), Bocar (2013), and Taskeen et al. (2014) that lack of money has a great factor in the difficulties experienced by the researcher. Being a requirement for the educational course, the researcher need to a lot budget for the printing cost.

**Theme 2: Respondent- related difficulties:** Respondents can choose as random or vice versa. The following are the subthemes generated.

**Subtheme 2.1: Reliability of answers from the respondents:** Responses coming from the respondents are important. It is the basis of the remaining chapters of the research paper after research methodology. In the statement of SEG 12, “Indefinite respondent’s answer”. It shows that there are times that the responses are not enough to produce a better analysis specially if it is not long and detailed, in this case the researcher cannot manipulate one’s responses and at the end low quality of paper is being produced. In the theme generated it is similar in the study of Earley (2007), he came up with a challenge involved in the processoriented subtheme that securing the appropriate participants. It is a bigger problem if the target respondents did not understand the purpose of the study so some of the researcher brief or orient first the respondents about it. But sometimes it is hard especially if the process of gathering data is through online.

**Subtheme 2.2: Collecting of questionnaires based on schedule**

Gathering of data requires time (Sharp et al. 2002). There is no assurance that questionnaires which had been floated by the researcher will return. Aside from the statement of SEG 10 it was also mentioned by SEG 03, he/she pointed that due to late returning of the questionnaires it was been so hard for him/ her to follow the time table. We can conclude that retrieving the data has a great contribution in the difficulties experienced by SEGs. In some case like in the study of Bocar (2013), among the 14 participants, 100% describe that they experience difficulties in the cooperation of the respondents, she interpreted it as very great extent.

Observing, people tends to be sensitive or insensitive (Bocar, 2013), researcher cannot asses if the respondents are approachable due to unfamiliarity. For this reason, it may affect the retrieving of

the questionnaire.

**Theme 3: Advisee and Adviser- related difficulties:** Communication is not one sided. SEG 15 statement shows that he/ she cannot ask help to his/her adviser. Graduates’ cannot blame it to the adviser. Observing, a student normally only has one adviser but an adviser may have several students. Therefore, if the advisee will not approach the adviser and ask for his/ her time, the adviser cannot entertain the advisee. This is one of the problems stated by Mapolisa & Mafa (2012) students fail to meet regularly the supervisor for the consultation same as with the supervisor. And also if the adviser will not make time for his/her advisee may affect its time for the consultation. Given the schedule of both sides the adviser is busier than the advisee. Aside from teaching, he/ she needed to do paper works. From the experience of the respondents, break time of the adviser was only the time they can consult their paper. In the findings of Tan (2007) she reveals that those undergraduate students that guided by a competent, motivating, and research advisers will complete the research process successfully and in vice versa if the advisee is misguided by their adviser there is a chance that success cannot be attained.

**Suggestions in Coping with Difficulties:** Table 16 consists of suggestions in coping the difficulties that the science education graduates experienced.

**There Are 3 Themes Generated, These Are the Following**

**Theme 1: Observance of time management**

To increase the success rate of publishing own research paper the researcher himself/herself must have discipline in time management and organization. According to Nasrullah & Khan (2015) time management is very important and can affect the individual’s overall performance. Before initial writing researcher need to be confident and have trust that until the end they will finish it successfully. Writing research is cannot be done in one seat. It requires more time and focus to the goal. To surely finish the paper, respondents suggested about time management. Time table is useless if you will not follow it strictly step by step.

But not all the time schedule written in the time table can be followed. SEG 03 stated that due to the difficulty in collecting the questionnaires the time table that has been followed will cause discrepancy so adjustments needed to do in order to solve these problems. Moreover, the researcher must think ahead of the time. Respondent 10 suggested that the floating of the questionnaires must be advance depending on what kind of respondents that will answer the questionnaires. According to the study of Chase, Topp, Smith, Cohen, Fahrenwald, Zerwic, Benefield, Anderson, & Conn (2013) to implement an effective scheduling the researcher need to choose days that is less demanding than other days of the week. In a sense researcher need a perfect timing for the procedures he/ she will do.

**Theme 2: 2. Use of Cognitive Approach in Research:** According to Ball and Ormerod (2017) Researchers should embrace an appropriate objective plan of action when conducting a study, which needs the use of quantitative methods. But they also justified that a full perception of cognitive phenomena is only attainable through the meticulous implementation of mixed methods that maximize the strengths of both qualitative and quantitative approaches. For the researcher to produce a high quality of paper, mastering the research process is the best options. There are two (2).

**Subthemes Generated These are the Following:** Subtheme 2.1: Knowledge towards research Research work is a requirement for any degree. Acquiring knowledge towards research process catered by the different course but not all the things that should learn are being taught by the professor. Possible reason is that there is no time to teach detailed the process. Having the knowledge towards a research is not just for the students who currently taking it. SEG 15 pointed that “maybe much better if all the researcher adviser knows how to conduct research so that they are capable of guiding their advisees”. In the study of Mapolisa & Mafa (2012), Bocar (2013), and Earley (2007), they mentioned that lack of research experience by the supervisor has a greater effect on guiding the student. Noticing that the reason of having a research adviser is to guide the students through research journey so if they are not capable there’s a tendency that advisee will be misguided.

**Subtheme 2.2: Reading related literatures:** One of the purposes of research is to contribute new knowledge that will help the society. Researches become the basis of another research or the so called related literature. Having a knowledge and skill in writing research will help to produce a good paper. Reading related literature is the most suggested way to pass the difficulties encountered by the researcher “Read a lot of books related to your topic...” as said by SEG11. The more the researcher read related literature the more ideas can support the arguments. Some tips suggest by Booth, Colomb, & Williams “read generously but critically”. They explained that by reading the researcher must understand it fully. Go slowly and reread if it still confusing. If it is done, the researcher can freely agree or disagree with the source that has been read. If it has a point, include it in the supporting evidence of the research.

**Theme 3: 3. Establishment of Good Communication Between Advisee and Advisers:** In the previous subheadings it was mentioned that the respondent was having a difficulty in approaching the advisee. Reason to be stated is that communication is not evident. Students have the right to receive an advice from the institution, with that adviser is assign but the relationship must not be a passive one (Sharp et al. 2002). “Advice”, is an opinion or suggestion about what someone should do (Merriam, nd) meaning an adviser cannot give suggestions without talking to the advisee or without receiving a questions to the advisee. It is advisable that the two must work things out to produce a good paper.

## Conclusions

From the mentioned findings the following conclusions are derived:

1. A typical science graduate is a male aged 18-21 years old, single, and graduated as Biological Science major and currently engaged in work.
2. Phase 1 “Research Conceptualization” and Phase 4 “Data Analysis and Interpretation” were difficult for the Science education graduates while Phase 2 “Proposal Writing”, Phase 3 “Data Gathering”, and Phase 5 “Final Manuscript Writing” were quite difficult for the Science education graduates.
3. In Phase 1, Phase 3, and Phase 4 there were no significant difference when grouped according to age, sex, specialization, year graduated, and occupation. While when it comes to Phase 2, in specialization null hypotheses was rejected. Lastly Phase 4, specialization and year graduated has significant difference because the null hypotheses were rejected.
4. Mostly the difficulties that were experienced by the science education graduates are related to research itself, from the respondents, and advisee- adviser relationship. Generally, students view about research as a requirement for a degree could be the reason why high quality of paper was not produced.
5. Most suggestions were related to time management, cognition in research process and relationship between advisee and adviser.

## Recommendation

In view of the findings and conclusions, the researcher offers the following recommendations:

1. A workshop may be spearheaded by the college which include topics on conceptualizing topic that is timely and have clear objectives, techniques in reviewing related literature; and computing statistical measures using SPSS.
2. Encourage advisee and adviser to present conference papers at local and international conferences. Through these, advisee and adviser can enhance their research competence and skills and also be the pride of their institution.
3. Before the teacher handle a research class he/she may have an in-depth and adequate experience. An adviser could have presented at least one paper in a research conference or he/she is already done with his/her master’s degree. If not, institution must require them to revisit the research process by attending seminars or workshops.
4. Propose seminar or lecture about time management in research process. This must be set before the start of the semester which offer research 1 subject at least 1 hour of the class, it may include setting up an effective time table.
5. Further study may be conducted to validate the results of the study.

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