

RESEARCH DIFFICULTIES CONFRONTING GRADUATE STUDENTS OF AGRICULTURAL EDUCATION IN DELTA STATE UNIVERSITY, ABRAKA

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ABSTRACT

This study aimed at identifying the difficulties faced by graduate students of Agricultural Education at the Delta State University Abraka in AGED 803 (Empirical methods of investigation in Agricultural Education), as a basis for prioritizing areas of emphasis in teaching new enrollees in the 2012/2013 academic session. The study utilized the Delphi technique to identify difficulties facing a panel of 17 graduate students of Agricultural Education at the Delta State University, Abraka. A total of 38 concepts were listed after the first round, while 13 of them reached consensus at 60% criterion at the third round of the Delphi, top among which were: statistical analysis of data, identification of a research problem, hypothesis testing and developing an appropriate theoretical/conceptual framework for a study. Recommendations included revisiting the method of teaching research principles at the undergraduate level towards ensuring that the basics of research is taught effectively and that students are adequately supervised while carrying out their undergraduate projects thus ensuring mastery of the rudiments of the entire research process.

KEYWORDS: Research difficulties, Graduate students, Agricultural education, Delta State University.

Introduction

Serious concerns have been raised by lecturers in the Agricultural education unit of Delta state university following poor performance of graduate students in seminar and dissertation presentations and the actual conduct of research. It would seem there was a wide knowledge gap as students over the years have shown a lack of positive learning outcome portrayed in their inability to display an understanding of the research process. The trend is particularly worrisome when viewed against the assumption that graduate students have carried out some level of research as a compulsory requirement for the award of their Bachelor's degrees.

Research refers to the systematic process of collecting and analyzing information or data to increase our understanding of a phenomenon under study. It is the function of the researcher to contribute to the understanding of the phenomenon and to communicate that understanding to others (Mohan, 2011). Kerlinger & Lee (1999) defined it as a systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena. Research is important for the advancement of knowledge, increasing understanding of educational phenomena, providing solutions to educational problems, improvement of educational practice and bringing about overall development and progress (Nworgu, 1991).

The primary objective of the AGED 803 course is to develop a research orientation among the students and to acquaint them with the fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific, social research methods and their approach. It includes discussions on sampling technique, research designs, and techniques of analysis. Some other objectives of the course include:

1. To develop an understanding of the basics of the research process.
2. To develop an understanding of various research designs and techniques.
3. To identify sources of information for literature review and data collection.
4. To develop an understanding of the ethical dimensions of conducting applied research.
5. To appreciate the components of scholarly writing and evaluate its quality.

Mutula (2009) cited in Newman & Severino (2011) reports that postgraduate research is a form of apprenticeship carried out under the supervision of senior faculty members. The faculty member involved in the supervision of postgraduate research must have the right expertise to play the role of promoter/supervisor. Worldwide, the completion rate for graduate students ranges from poor to abysmal (Rogers & Fleck, 2014); Lehtinen and Rui, as cited in (Sunzuma, Zekewa and Bhukuvhani, 2012) and (Komba, 2016). The responsibility for this must be shared by candidates, supervisors and the institutions to which they belong. According to Uzoagulu (2011), it is expected that every graduate of a tertiary institution should be able to identify problems in his/her environment. The beginning of learning in research is identifying problems in one's field of study and many students appear to experience difficulties in this regard. The research process involves defining the problem, choosing a design for the research, estimating the sample, collecting data, analyzing the data, formulating the conclusions and preparing the report (Mohan, 2011).

Research is an exciting adventure which if properly carried out adds richly to the student's experience, the school's academic rating and society through the creation of new knowledge which could be useful in solving related problems. Beginning researchers always encounter problems in designing and carrying out their first study which usually is their project, thesis or

dissertation (Nenty, 2009). Pearce (2005) reported the following as some of the challenges in the supervision of their research projects:

- Lack of time
- Library resources
- Commitment and motivation to do the research
- Adequate theory in the area of research
- Student failure to meet regularly with the supervisor
- Family problems/commitment

According to Clewes (1996) project refers to first-degree research, a dissertation masters' degree and thesis for higher research degrees. Hussey and Hussey (1997) identified four objectives of the undergraduate research project as:

1. to develop analytical problem-solving skills
2. to actively learn through identification of a problem to be explored and completed.
3. skill development for independent research and
4. for application of academic knowledge.

Accordingly, the undergraduate project demands intellectual and other empirical process skill development. Clewes, (1996) further noted that first-degree research differs from higher degrees because it requires independent inquiry and exercise of judgment although analytical rigor is not always demanded. The undergraduate project holds special value for both the teacher and the student (Webster, Pepper & Jenkins, 2000). For many students, it provides the first opportunity to plan and carry out academic research and is often the most substantial and independent assessment that they will undertake during their degree.

A research endeavor in the view of Ellis and Levy (2008) may best be regarded as being structured to incorporate some distinct but related elements including the research problem that drives the study, the goals, research questions, review of related literature, methods, results and conclusions. The research problem serves as the starting point for the research and is a unifying thread that runs throughout the elements of the research endeavor (Leedy & Ormrod, 2005).

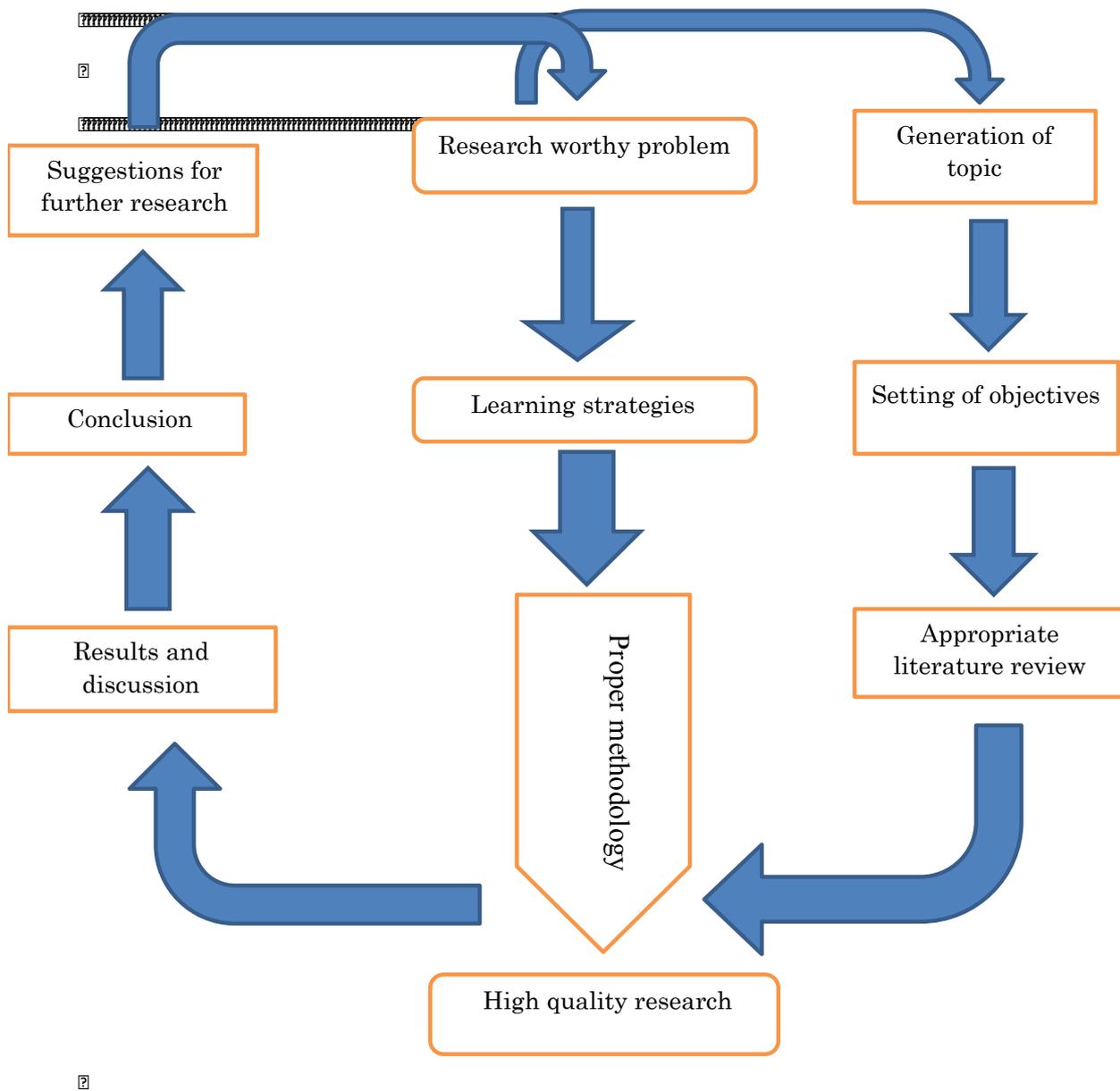


Fig. 1: Conceptual model developed by the researcher

A worthy research problem must exist for research to be conducted in the first place. The use of appropriate learning strategies will equip graduate students with the ability to come up with a worthy problem, generate the appropriate objectives, research questions/hypotheses, employ appropriate methodology and literature to support the study, draw necessary inferences and eventually report the work in such manner that contributes to knowledge and leads to the creation of high-quality research. Learning strategies such as the case based method and the problem based learning methods would ensure learners are engaged in self-directed learning and have the desire to explore content beyond the scope of formal lectures (Ekmekci, Hancock & Swayze, 2012). According to Helm as cited in Lessing and Schulze (2003), difficulties in graduate research are mainly in the area of the research design, data collecting and processing and report writing. The writing phase of the research report, be it a dissertation or thesis, has been posing a lot of challenges to students. This concurs with Huang (2007) who noted that to the vast majority of students, the dissertation is by far the most challenging piece of academic work. Findings of a study by Wang and Li (2008) also indicated that students faced a lot of challenges in their thesis writing which might have emanated from pedagogical shortfalls and lack of intercultural sensitivity in the supervision of students.

A study by Bitchener and Basturkmen (2006) among other issues, focused on student difficulties in writing the discussion of results section (DRS) of their thesis. Their findings also showed that students did not have an adequate understanding of the function of the discussion results sections of their theses.

Therefore, if students have difficulties with an understanding of the various concepts and components of research, research products may be severely undermined and may not be taken seriously. In research with multiple stakeholder groups (heads of department, undergraduate course leaders, project supervisors, employees and final year business studies students) both domestic and international carried out by Clewes (1996) an overwhelming support for the educational value of the project as an assessment method was indicated. Concerns identified by respondents included differing expectations of what is required, the variable quality of supervision and marking and workload problems for both staff and students, exacerbated by students poor time management skills.

Research methods is a complex domain that involves a combination of procedures and definitions many of which the academic community itself has no uniform conception of (Lehti & Lehtinen, 2005). Research is also a sustained task that involves different kinds of activities that must be interrelated and for which decisions made at one stage of the process influences choices at later stages (Potter, Caffrey, & Plante 2003). Further, individual researchers face many unique situations when actually conducting research and it is impossible to introduce students to every potential research setting and how that setting will impact the study design, conduct, or outcome (Taylor, Millei, Partridge, & Rodriguez, 2003).

Qualitative research with markers in Hand and Clewes(2000) revealed three common criteria for assessing undergraduate projects; content (relation of theory to practice), research process (understanding of methodological issues and evidence of data collection) and presentation(including referencing and keeping a narrative thread).These are areas from observation and evaluation which some students appear to have serious difficulties with despite the assumption of previous knowledge following the writing of their undergraduate project. These have formed the basis of this research which is to find out particular areas of research in which graduate students experience difficulty. These areas of difficulties as identified by the students will guide teachers of AGED 803 to utilize the most appropriate approach to teaching that will produce better quality of students with the required skills and attitude to carry out research dissertation and thesis writing effectively.

Research Focus

The focus of this study was to identify the major difficulties in the research course (Empirical methods of investigation in agricultural education, AGED 803) confronting graduate students in the Agricultural Education unit of Delta state University during the 2012/2013 academic session.

Method/Procedure

The Delphi technique was employed in carrying out this study as it best served the needs/objectives of the study. The features that distinguish the Delphi technique are its use of experts and its methodology. Advocates of the Delphi method maintain that human judgment is legitimate and useful in the process of generating forecasts and therefore believe that the use of carefully selected experts can produce reliable and valid results.

Furthermore, the Delphi technique strives to improve on the weaknesses inherent in other methods such as relying on a single expert, a group average, or a round table discussion. The use of a single expert puts too much weight on one person's opinion while the group average method fails because consulted individuals have neither the opportunity to provide their most thought-out input nor the benefit of hearing other responses that might encourage a refinement of contributions. The round-table approach is unreliable because some members of the group may unduly influence the decision (Clayton, 1997). The Delphi method has the advantage of soliciting anonymous input so that influences like the professional tendencies of a respondent or the forcefulness of his or her personality are neutralized. This positions all participants on an equal stature in the entire process, while their comments may influence the other participants only through the logic of their argument, and not their name recognition.

In the view of Skulmoski, Hardman, and Krahn (2007), as cited in Tchaona & Onias (2012), the Delphi method is one that appeals to graduate students completing masters and Ph.D. level research. It is a repetitive process used to collect and treat the anonymous judgment of a panel using several data collection and analysis techniques mingled with feedback. Delp, Thesen, Motiwalla and Seshadri (1977), cited in Alibaygi, Midehkordi & Pouya (2012), described the Delphi technique as a group process used to solicit, collate, and direct expert responses toward reaching consensus. Helmer (1966) also described the Delphi technique as a method of securing and refining group opinions and substituting computed consensus for an agreed-upon majority opinion.

The method is well suited as a research instrument when there is incomplete knowledge about a problem or phenomenon. The Delphi method is appropriate for studies requiring an understanding of challenges, opportunities, and solutions (Skulmoski, Hardman & Krahn, 2007). The purposive sampling technique was utilized for this study, which comprised 17 graduate students enrolled in the master's program for Agricultural education in the 2012/2013 academic session. The purposive sampling adopted agrees with the view of Stufflebeam, McCormick, Binkerhoff, and Nelson (1985) which stated that the Delphi technique is especially effective in obtaining consensus from a purposively selected group of experts.

An open ended questionnaire administered on the panel of respondents with the question: list aspects of the research methods course perceived by you as difficult having studied a research course in your undergraduate program was used to generate the responses/difficulties the students thought they faced. This follows Schmidt's (1997) view that sometimes the purpose of the first round Delphi is to brainstorm. After the initial responses were received, they were summarized using frequency counts into 38 responses.

The second round involved the development of an instrument using the list of items at the end of round one which were re-administered to the panel for their rating using a likert scale in the form: 1=strongly disagree, 2= disagree, 3= undecided, 4=agree

and 5=strongly agree. A cut-off point was set at 3.0 which was used to accept or reject items for the final round. Items that had mean score of 3.0 and above were adjudged adequate for inclusion into the questionnaire. From this second round response the items were further reduced to 27.

The third questionnaire sought to determine consensus. The students constituting the panel were required to indicate whether they agreed with each of the 27 items by simply responding yes or no. At the end of this round, 13 items attained consensus at the 60% criterion.

There have been criticisms of the Delphi method, most notable of which was by Sackman (1975), who found fault with many elements of the process, but most notably with what he considered to be the Delphi's failure to meet APA's standards for Educational and Psychological Tests and Manuals. Specifically, he concluded that conventional Delphi neglects virtually every major area of professional standards for questionnaire design, administration, application, and validation. Despite Sackman's criticisms, we believe that the Delphi is well-suited for our current project and we agree with Clayton's (1997) conclusion that if the objective of a study is the identification of content based on expert consensus, then the Delphi technique is an appropriate choice as it certainly will enhance the significant contributions of the panel.

Analysis of Data

Data were analyzed using descriptive statistics. Data collected using Likert-type scales were treated as interval data and reported as means and standard deviations. Nominal data were reported using frequencies and percentages.

Results

This study sought to identify the major difficulties facing M.Ed (Agricultural Education) students in the Delta state University Abraka in AGED 803(Empirical methods of investigation in Agricultural Education). To accomplish this objective the Delphi technique of obtaining group consensus was employed. The first round of the study used a questionnaire with the open-ended question "list aspects of research methods course perceived by you as difficult having studied a research course in your undergraduate program? This question facilitated the generation of an array of response categories. Thirty-eight categories of difficulties were identified in the first round. Table 1 contains a summary list of problems identified in round one. The response rate for the first round of the study was 100%. The most frequently identified problem was statistical analysis of data cited by all the respondents and identification of research problem cited by twelve out of the seventeen respondents. The other problems included choosing a research topic and stating of hypothesis.

Table 1

Round one: Major difficulties in research faced by graduate Agricultural Education students (N=17)

Difficulties	Frequency
In-text citations	1
Review of literature	8
Stating the null hypothesis & its alternate form	10
Designing an instrument for a study	4
Method of data collection	5
Statistical Analysis of data collected	17
Identification of a research problem	12
Writing background to a study	3
Choosing an appropriate title for a study	10
Writing the limitation to a study	3
Collating a reference list	8
Drawing inferences	2
Choosing a population for a study	1
Making recommendations for a study	2
Writing the significance of a study	3
Describing the delimitation/scope of a study	1
Gathering relevant literature for a proposed research	1
Selecting appropriate data analysis for a study	2
Experts to be consulted	1
Determining the scope of a study	5
Raising relevant research questions	4
Finance	1
Hypotheses testing	5
Identification of variables in a study	5
Definition of terms	2
How to derive the sample for a study	6
Writing the methodology section	6
Developing an instrument for a study	4
Reporting a study	2
Stating the objectives of a study	1

Theoretical /conceptual framework	1
Calculating and interpreting the reliability of the instrument selected	1
Interpretation of results	1
Validation of an instrument	1
Pilot study	2
Stating the problem that gave rise to a study	2
Abstract	1
Execution of a study	1

In the second round of the study, the students were asked to rate their level of agreement with the thirty eight items identified in the first round. Items scored means equal to or greater than 3 were accepted as major difficulties for the respondents which would be used for the third round. This gave rise to the 27 items used in the next round. The highest mean score of 4.50 and standard deviation of 0.82 was obtained for item 5 (statistical analysis of data collected), closely followed by identification of a research problem with a mean of 4.2 with standard deviation 1.31, hypothesis testing, (mean=4.2, SD=1.00). Identification of the variables in a study, theoretical/conceptual framework, and calculation of the reliability of the instrument had means of 3.9 each and standard deviations of 1.30, 1.08 and 1.23 respectively. It is also noteworthy that issues like identification of the variables in the study, theoretical/conceptual framework and calculation of the reliability of the instrument which had very low frequencies in the first round had high rankings in the second round.

Table 2

Round Two: Means, standard deviations and rankings of the identified difficulties after round two (N=17)

Difficulty	Mean	SD	Rank
In-text citations	3.11	1.32	21 st
Review of literature	3.11	1.6	22 nd
Designing an instrument for a study	3.35	1.22	16 th
Method of data Collection	3.0	1.92	26 th
Statistical analysis of data collected	4.5	0.82	1 st
Identification of a research problem	4.2	1.31	2 nd
Writing the background to a study	3.6	1.12	7 th
Choosing an appropriate title for a study	3.4	1.44	11 th
Writing the limitation of a study	3.3	1.28	17 th
Collating a reference list	3.2	1.17	18 th
Making recommendation(s) for a study	3.1	1.21	23 rd
Writing the significance of a study	3.1	1.44	4 th
Describing the delimitation/scope of a study	3.1	1.53	25 th
Raising relevant research questions	3.4	1.56	12 th
Hypothesis testing	4.2	1.00	3 rd
Identification of the variables in a study	3.9	1.30	4 th
Deriving the sample for a study	3.2	1.15	19 th
Writing the methodology section of a report	3.4	1.08	13 th
Selecting an instrument for a study	3.4	1.37	14 th
Theoretical/conceptual framework	3.9	1.08	5 th
Calculating/interpretation of reliability of an instrument	3.9	1.23	6 th
Interpretation of results	3.2	1.28	20 th
Validation of an instrument	3.4	1.25	15 th
How to carry out a pilot study	3.6	1.28	8 th
Writing an abstract	3.5	2.19	9 th
Statement of a problem	3.4	1.46	10 th
Execution of a study	3.0	1.24	27 th

In the third round, the respondents were requested to indicate whether they were in agreement or not with the 27 items listed in Table 2 in order to reach a consensus. Sixteen students responded in this round. The students forming the expert panel agreed that 13 items constituted the major areas of difficulty that undermine their understanding of the research methodology course. Consensus was set at 60% criterion.

Table 3

Round 3: Level of Agreement with difficulties (N=16)

Items	Agree	
	Yes	%
Statistical analysis of data collected.	14	87.5
Identification of a research problem	14	87.5
Hypothesis testing	13	81.3

Identification of the variables in a study	7	43.8	
Theoretical/conceptual framework	13	81.3	
Calculating/interpretation of the reliability of an instrument	10	62.5	
Writing the background to a study	7	43.8	
Pilot study	8	50.0	
Writing an abstract	5	31.3	
Statement of the problem that gave rise to a study	8	50.0	
Choosing an appropriate title for a study	9	31.3	
Stating relevant research questions	12	50.0	
Writing the methodology section of a report	10	56.3	
Selecting an instrument for a study	10	75.0	
Validation of the instrument for a study	13	62.5	
Designing an instrument for a study	12	66.5	
Writing the limitation of study	7	43.8	
Collating a reference list	2	12.5	
How to derive the sample for a study	8	50.0	
Interpretation of results	13	81.3	
In- text citations	6	37.5	
Review of literature	9	56.3	
Making recommendation(s) for a study	4	25.0	
Writing the significance of a study	4	25.0	
Describing the delimitation/scope of a study	10	62.5	
Method of data collection	11	68.8	
Execution of a study	7	43.8	

The highest consensus was reached on statistical analysis of data and identification of problem, 87.5% each. Four other difficulties scored consensus mark of 80% and above, including validation of the instrument, theoretical/conceptual framework, testing of hypothesis and interpretation of results, all scoring 81.3% consensus.

Table 4
Research Difficulties that reached consensus at 60% criterion

Consensus list of difficulties	%
Statistical Analysis of data collected	87.5
Identification of research problem	87.5
Hypothesis testing	81.3
Theoretical/conceptual framework	81.3
Interpretation of results	81.3
Validation of the instrument for a study	81.3
Designing an instrument for a study	75.0
Selecting an instrument for a study	75.0
Stating relevant research questions	75.0
Method of data Collection	68.8
Reliability of the instrument	62.5
Describing the delimitation/scope of a study	62.5
Writing the methodology section of a study	62.5

Discussion/Implications

The difficulties identified in this study agree with the assertions of Aspland, Edwards, O'leary and Ryan (1999) though it would seem that their students seemed to be affected by external factors like lack of time, family problems and lack of motivation to do the research while the subjects in this research were seriously ill-equipped to begin the research in the first place due to a lack of understanding of the basic concepts of the research process. It was also discovered in a study on counseling students' attitude towards research class that learning difficulties in research methods classes hinder students' interest and attitude toward research and future research productivity (Astramovich, Okech, & Hoskins, 2004; Fong & Malone, 1994; Wheeler & Elliott, 2008; Woolsey, 1989). Many factors contribute to the learning difficulties in research methods classes. The study of research design and statistics often elicit graduate students' anxiety and resistance (Royse & Rompf, 1992; Sheperis, 2010). The issues undermining steady progress and success in research methodology vary from student to student and may be due to previous knowledge and quality of lectures and research carried out at the undergraduate level. In the study done by Tan(2007), students who engaged in the research also had to go through the rigorous process of conceptualizing the problem; selecting, organizing, and documenting related literature and studies; selecting the research method and sampling techniques; gathering and treating data; generalizing the results/findings; and disseminating research output.

Nonetheless the fact that first degree research does not require analytical rigor according to Clewes (1996) may also be responsible for the ill preparedness of the graduate students to carry out a research and may also explain the reason why all

respondents agreed that statistical analysis of data was the most serious of all the difficulties identified. In a study by Earley (2007) on lessons learnt from students' research experiences, many proposal authors described challenges they faced to include (a) generating useful and meaningful research questions, (b) securing appropriate participants, (c) collecting and analyzing meaningful data, and (d) considering issues of validity and quality as they wrote the final report. For some proposal writers, these were issues they were facing at the time they submitted their narratives, unresolved but clearly thought through. Other proposal writers spoke of how they navigated these issues to a successful end.

Sayed, Kruss and Saleem (1998) conducted a longitudinal study of the difficulties faced by ten research students and discovered a range of issues pertaining to best practice in research supervision. According to them, the candidates in the study were not familiar with the process of conducting research, the methodology involved and the conventions of thesis writing. They further elaborated that these were due to a lack of understanding, uncertainty of the candidates own capabilities and high levels of anxiety. In relating their findings to the supervision relationship, Sayed *et al* (1998) claimed that the candidates in their study failed to meet the expectations of their supervisors and that they had a learning style that did not match the supervisor's style. To clarify, while the supervisors expected them to be independent and possess an intellectual capacity suitable to that of a research candidate at a postgraduate level, the candidates were dependent on their supervisors and required important decision making to be carried out by the supervisors. Previously reported similar studies in Nigerian universities were not seen if they exist and this study may be particularly new in the department of vocational education at the Delta State University Abraka, Nigeria.

Conclusion/Recommendations

This study was able to identify 13 major difficulties facing graduate students of the Agricultural Education unit (Masters Class 2012/2013 session) of the Delta state University, Abraka in AGED 803(Empirical methods of investigation in Agricultural education) course. Statistical analysis of data collected, identification of research problem, hypothesis testing, theoretical/conceptual framework and validation of the instrument for the study were the foremost. Research dissertation carried out at the graduate or undergraduate level is a pointer to the quality of work going on in an institution. A lack of understanding of the whole research process could seriously undermine the quality of research work churned out and in the long run, the rating of the Department and Institution at large. The following recommendations were therefore made based on the findings of this study.

- Further research, should be carried out perhaps at the beginning of each session with a view to identifying areas of concern for the new students and to concentrate on those without abandoning the research methodology curriculum itself. This will help to meet the stated objectives of the course and over time, generate a pool of graduates well adapted to and able to teach, conduct and supervise research.
- An appraisal of the method of teaching of research in various universities to undergraduates should be carried out. Case based method which allows students the opportunity to investigate and discuss real life problems from a number of different perspectives without necessarily asking the students to find a particular solution should be utilized. The problem based learning approach which facilitates critical thinking should also be encouraged. These approaches encourage self-directed learning aimed at increasing motivation, retention, and critical reasoning by challenging students to solve real world problems
- The method of writing and defense of undergraduate projects should be re-examined and methods that encourage critical reflection be adopted .
- Supervisors involved in research supervision should be trained and re-trained periodically, to update their skills in line with changing trends and nature of students
- Writing of thesis and dissertation research should be incorporated into the course work of graduate students to enable them do significant segments of it on a regular schedule, under supervision.
- Postgraduate students must take initiative in seeking resources, assistance, managing time, and forming good reading habits. Postgraduate students should be motivated by the university authorities and other stakeholders in Nigerian postgraduate education systems by providing their needs in their hierarchical order especially those of accommodation and good study space.

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