

ASSESSMENT OF THE APPROPRIATENESS OF INSTRUMENTS USED FOR DATA COLLECTION IN B.Sc. Ed. RESEARCH PROJECTS IN A NIGERIAN UNIVERSITY

BY

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Abstract

The study examined the appropriateness of instruments used for data collection in B.Sc. Ed. research project in Kogi State University, Anyigba. Two research questions were raised for the study. The study employed the Meta analysis research design. The population consisted of 950 bound B.Sc. Ed. research projects for years 2019/2020 and 2020/2021 academic sessions in the Faculty of Education, Kogi State University, Anyigba. A sample of 281 bound research projects was drawn through the proportionate random sampling technique. The instrument used for data collection was a proforma developed by the researchers. Research questions were answered using frequency count and proportion. The results showed that questionnaire was the most commonly used research instrument. It was further revealed that the proportion of B.Sc. Ed. research projects that have appropriate research instruments was 0.54 which was less than the National University Commission standard of 0.75. Based on the above finding, it was concluded that most the instruments used for data collection in B.Sc. Ed. research projects in Kogi State University, Anyigba were inappropriate. Thus, it was recommended among others that lecturers that teach research methods should expose B.Sc. Ed. students to practical to enable them acquire the basic skills for selection and utilization of appropriate research instruments for data collection. Also, project supervisors should be more thorough in their supervision and be conversant with the appropriate research instruments suitable for data collection on a particular study so as to give the necessary guidance to their supervisees.

Keywords: Assessment, instrument, data, research

Introduction

One of the basic requirements for obtaining the Bachelor of Science, Education (B.Sc. Ed.) degree in a Nigerian university is the completion of education research project. Affirming this, Onah and Amaechi (2017) stated that the curriculum for tertiary institution stipulates that undertaking a project work would be pre-requisite for graduating in any degree programme of universities. Research project is an independent endeavour required of students

in tertiary institutions under the supervision of academic staff in partial fulfillment for the acquisitions of an academic degree. It gives students the opportunity to investigate into various problems in their areas of specialization and employing scientific method to systematically proffer solutions to identified problems (Ifedili & Omiunu, 2012). The credibility of the solution proffered by researchers to any identified problem depends on the appropriateness of the instruments employed for data collection among others. This is in line with the views of Onah and Amaechi (2016) who posited that one of the best ways of ensuring that there is a successful conduct of educational research is through best practice in the appropriateness of the instruments for data collection. The utilization of inappropriate instrument might lead to the collection of meaningless data and achieving misleading results. This could be why Isangedighi and Ogomaka as cited in Onah and Amaechi (2016) opined that without data collection instrument, there exists no research.

According to Alegbeleye and Fabunmi (2006) instruments refer to measurement devices or tools which are used for data collection in educational research. The most commonly used instruments for data collection in educational research are: test, questionnaire, interview, and observational tools like rating scales, checklist, anecdotal records, inventories, socio-metric technique and profoma (Uzomah & Amaechi, 2016). Test is a set of questions or tasks based on prescribed curriculum content intended to measure testee's achievement, ability, intelligence etc. Questionnaire is a set of questions based on the purpose of study to which the respondent is required to write or tick the answer they considered appropriate. Questionnaire is an effective tool for obtaining information about attitude, interest and opinion of respondents on a particular research topic. The questionnaire could be structured or unstructured. According to Anikweze (2013) interview is an instrument use for gathering data through oral question and answer method involving personal contact between the interviewer (researcher) and interviewee (respondent). Like the questionnaire, interview could be structured or unstructured. Observational tools like rating scale consists of a set of characteristics or qualities to be judged and some type of scale indicating the extent to which each attribute is present (Gronlund cited in Anikweze, 2013). On the other hand, checklist is a set of items or statements outlined in a format for a researcher to observe if they are present or absent (Onah & Amaechi, 2016). The basic distinction between a checklist and rating scale is the type of judgmental stance required. A checklist demands yes/no judgment, while a rating scale calls for the degree to which the attribute is present.

Anecdotal record is a written record that describes meaningful incidents or events that have been observed in the life of a child. It attempts to describe episodes most typical of examinees' behaviours with reference to educational outcome in the area of personal and social adjustments (Emaikwu, 2013). When the recording of students' behaviours is carried out overtime, anecdotal records provide a longitudinal qualitative picture of the behavioural changes in the life of each student, records about individual needs and can later form basis for decision making by aiding human memory (Bandeley, Omodara & Oluwatayo, 2014). Socio-metric is an instrument used to ascertain the pattern of social relationship existing among a group. A researcher can use this instrument to assess the interrelationships among members of a class and determine the extent to which a student is acceptable to their class mate in a given situation. Profoma also known as format is a researcher developed instrument for collecting data on academic performance of students in a standardized test such as West

African Senior School Certificate Examination, National Examination Council Senior School Certificate Examination and Unified Tertiary Matriculation Examination etc.

According to Nwana (2007) assessment is the process of making a mental note of the state or condition of an object without necessarily carrying out any test and measurement and thereafter deciding whether and to what extent the activity or object possesses the attribute under study. Assessment is generally conceptualized as the process of investigating the status or standard of the target of consideration with reference to certain expectations . (Anikweze, 2019). Thus, the process of determining the appropriateness of the research instruments used in B.Sc. Ed. research project is assessment. Essentially in educational research endeavour, the contents of instruments for data collection are expected to include the research problems, purpose of the study, research questions and hypotheses among others. This is in line with the views of Onah and Amaechi (2016) who stated that the instruments for any study are to be so designed that it contains the ingredients of the research problem, purpose of the study, research questions and hypotheses. Collaborating the above, Onuka (2017) posited that some of the factors that may affect what to include in the content of a research instrument are research topic, statement of the problem, research questions and hypotheses, study variables, consideration for the research design, structure of the population and forms of analysis proposed for the study. Furthermore, the selection of instruments for data collection must align with the domain (s) and the facet of the domain the study is expected to cover. This is in line view of Onuka (2017) who stated that the domain and the concomitant area of the domain to be investigated are factors that determine the choice of instrument to be used. The requisite instruments associated with cognitive domain are tests-achievement test, aptitude test, intelligence, diagnostic test etc (Odinko, 2014; Aworanti, Onuka & Kolo, 2016). When the study involves affective domain the instruments that could be employed for data collection include questionnaire, interview, personality test and observational tools (rating scales, inventories, checklists, social metric techniques, anecdotal records etc). The research instruments associated with psychomotor domain include performance test and observational tools (rating scales etc). The aforementioned factors were employed in this study to determine the appropriateness of the instruments used for data collection in B.Sc. Ed. research projects. The call for concern arose from the observation that some students carrying out research projects in their final year usually employ inappropriate instruments for data collection. This is in line with the report of Onah and Amaechi (2016), who found that most of the B.Sc.Ed./B.A.Ed. research projects in universities in Imo state utilized inappropriate instruments for data collection. Likewise, Isiozor and Chidiebere (2017) reported that most of the post graduate students of Imo state university, Owerri employed inappropriate instruments in educational management and planning research work. They observed that most of the students' researchers employed questionnaire as a means of data collection even when the topics do not require the use of questionnaire. The reviewed studies were not conducted in Kogi State where the present study was conducted. This called for assessment of the appropriateness of the instrument used for data collection in B.Sc. Ed. research project in Kogi State University, Anyigba.

Purpose of the Study

The purpose of the study was to assess the appropriateness of the instrument used for data collection in B.Sc. Ed. research project in Kogi State University Anyigba.

Specifically, the study examined:

1. the instruments frequently used in B.Sc. Ed. research projects in Kogi State University Anyigba?
2. the proportion of B.Sc. Ed. research projects that have appropriate instruments in Kogi State University Anyigba

Research Questions

The following research questions guided the study:

1. What are the instruments frequently used in B.Sc. Ed. research projects in Kogi State University Anyigba?
2. What is the proportion of B.Sc. Ed. research projects that have appropriate instruments in Kogi State University Anyigba?

Methods

The study employed Meta analysis research design. The population of the study consisted of 950 bound B.Sc. Ed. research projects for 2019/2020 and 2020/2021 academic sessions in Faculty of Education, Kogi State University Anyigba. There are three departments in the faculty that run B.Sc. Ed. programmes, namely: Human Kinetics and Health Education, Science Education and Social Science Education. The Yaro-Yamen’s formula for determining sample size was used to obtain a sample of 281 bond B.Sc. Ed. research projects through proportionate random sampling technique.

Table 1

Population and Sample Distribution Based on Department

S/N	Department	Population	Sample
1	Human Kinetics and Health Education	510	151
2	Science Education	348	103
3	Social Science Education	92	27
Total		950	281

The instrument used for data collection was a proforma developed by the researchers. The instrument sought information on the research title, purpose of the study, research questions, hypotheses and types of research instruments used in B.Sc. Ed. research projects. The researchers sought the permission of the Head of Departments of Human Kinetics and Health Education, Science Education and Social Science Education in Faculty of Education, Kogi State University, Anyigba before collecting data for this study. The data were analyzed using frequency count and proportion.

Results

Research Question 1: *What are the instruments frequently used in B.Sc. Ed. research projects in Kogi State University Anyigba?*

Table 2
Frequently Used in B.Sc. Ed. Research Projects in Kogi State University Anyigba

S/N	Types of instruments used	No of sample that used it	No of sample that did not use it	Total
1	Test	30	251	281
2	Questionnaire	220	61	281
3	Interview	4	277	281
4	Rating scale	6	275	281
5	Checklist	5	276	281
6	Inventory	11	270	281
7	Anecdotal record	0	281	281
8	Socio-metric	0	281	281
9	Profoma	5	276	281

Table 1 shows the frequency of instruments used in B.Sc. Ed. research project. The table indicates that the questionnaire has the highest frequency of 220 representing 78.29% of the B.Sc. Ed. research projects sampled for the study. This is followed by test with the frequency of 30 representing 10.68% of the study sample. Inventory has a frequency of 11 representing 3.91% of the study sample. Rating scale has a frequency of 6 representing 2.14% of the study sample. Checklist and Profoma recorded a frequency of 5 each representing 1.78% of the study sample respectively. Interview has a frequency of 4 representing 1.42% of the study sample. While anecdotal record and social metric recorded 0 each in terms of frequency and percentage respectively.

Research Question 2: *What is the proportion of B.Sc. Ed. research projects that have appropriate instruments in Kogi State University Anyigba?*

Table 3

Proportion of B.Sc. Ed. Research Projects with Appropriate Instruments for Data Collection

No. of Projects	With appropriate instrument	Without appropriate instrument	Proportion with appropriate instrument	Proportion Without appropriate instrument
281	151	130	0.54	0.46

Table 2 shows the proportion of B.Sc. Ed. research projects that have appropriate instruments for data collection. From Table 2, the number of B.Sc. Ed. research projects that have appropriate instruments for data collection is 151 out of 281 B.Sc. Ed. research projects. That is a proportion of 0.54 representing 54 percent of the B.Sc. Ed. research projects have appropriate instruments for data collection. While the sum of 130 B.Sc. Ed. research projects has inappropriate instruments for data collection. That is a proportion of 0.46 representing 46 percent of B.Sc. Ed. research projects have inappropriate research instruments. Thus, it can be deduced that the proportion of B.Sc. Ed. research projects that have appropriate instrument for data collection is below the National University Commission (NUC) accreditation guideline of 0.75.

Discussion of Findings

The findings of this study indicated that out of nine research instruments examined in this report, seven namely; questionnaire, test, rating scale, checklist, profoma, inventory and interview were used in B.Sc. Ed. Research projects in Kogi State University Anyigba. The results further revealed that questionnaire was the most frequently used research instrument, followed by test, then inventory, rating scale, checklist, profoma and interview respectively with a wide margin between questionnaire and the other six research instruments. The result of this study is in congruence with the report of Isiozor and Chidiebere (2017) who observed that questionnaire was the most popularly used research instrument by students’ researchers even when the topics do not require the use of questionnaire. The likely reason students rush to use questionnaires was because it is considered by many as easy to construct and to administer to respondents.

The study further revealed that the proportion of B.Sc. Ed. research projects with appropriate instruments for data collection was 0.54 which was less than the criterion proportion of 0.75. This is an indication that the instruments utilized in B.Sc. Ed. research projects were inappropriate. The result agrees with the findings of Onah and Amaechi (2016) and Isiozor and Chidiebere (2017) who reported that students employed inappropriate research instruments for data collection. This shows that most of the undergraduate students lack the expertise in the selection and utilization of appropriate research instrument. Besides, the undergraduate students of Faculty of Education, Kogi State University, Anyigba, were not subjected to defense of their research projects in the last five years. Furthermore, the research instrument developed by undergraduate students for B.Sc.Ed. research projects were not

subjected to critical appraisal of research experts. These could be responsible for the use of inappropriate instruments in B.Sc. Ed research projects.

Conclusion

Based on the findings from this study, it was concluded that the most frequently used instrument for data collection was questionnaire and that most of the instruments used for data collection in B.Sc. Ed. research projects in Kogi State University, Anyigba were inappropriate. Most of the undergraduate students lack the skills for identifying, selecting and utilizing the appropriate research instruments.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The lecturers that teach research methods should expose undergraduate students to practical to enable them acquire the basic skills for selection and utilization of appropriate research instruments for data collection.
2. Project supervisors should be more thorough in their supervision and be conversant with the appropriate research instruments suitable for data collection on a particular study so as to give the necessary guidance to their supervisees.
3. Faculty of education should revive the policy of undergraduate research project defense to enhance the use of appropriate research instruments for data collection.
4. Faculty of education should organize workshops for the undergraduates where the rudiments of research methods are further explained in details.

References

- Alegbeleye, G.O. & Fabunmi, M. (2006). Instrumentation and data collection. In G.O. Alegbeleye, I. Mabawonku & M. Fabunmi (Eds.) *Research Methods in Education*. Ibadan: Ibadan University Printery.
- Anikweze, C. M. (2013). *Simplified approach to educational research*. Onitsha, Shiloh Press Associates.
- Anikweze, C. M. (2019). Assessment for learning: A panacea for quality education in Nigeria. A paper presented at the 23rd inaugural lecture in Nasarawa State University, Keffi.
- Aworanti, O.A.; Onuka A.O.U. & Kolo, T.N. (2016). Practice of public examining in Nigeria. Osogbo, ATMAN.
- Bandele, S.O., Omodara, M.F. & Oluwatayo, A. (2014). Anecdotal records as tools for assessing learners' progress in the universal basic schools in Ekiti and Oyo States, Nigeria. *Education Journal*, 3(3), 122-127
- Emaikwu, S. O. (2013). *Fundamentals of research methods and statistics*. Makurdi, Selfers Academic Press Limited.
- Ifedili, C., & Omiunu, S. (2012). Supervision of undergraduate final year's project requirement in Nigerian universities the way out of the wood. *Asian Culture and History*, 4 (2), 153-160.

- Isangedighi, A.J. & Ogomaka, P.M.C. (1992). *Educational research methods*. Owerri: Totan Publishers.
- Isiozor, G.N. & Chidiebere, A.R. (2017). Assessment of research instruments used by management and planning post graduate students of imo state university. *Journal of Educational Research and Evaluation*, 16 (1), 45-52.
- Nwana, O.C. (2007). *Introduction to educational research*. Ibadan: HEBN Publishers.
- Odinko, M.N. (2014). *Evaluation research: Theory and practice*. Ibadan, Girraffe Books.
- Onah, F. E., & Amaechi, C. E. (2016). Evaluation of the appropriateness of instruments used for data collection in B.Sc.Ed./B.A.Ed. research projects in universities in Imo State, *International Journal of Academia*, 2 (1).
- Onah, F. E., & Amaechi, C. E. (2017). Developing a checklist for assessing the appropriateness of education degree research projects in south-eastern universities, Nigeria. *International Journal of Scientific Research in Education*, 10 (1), 50-57.
- Onuka, A.O.U. (2017). Appropriate approach to instrumentation in educational research and evaluation. *ASSEREN Journal of Educational Research and Evaluation*, 2 (1), 25-34.