AWARENESS OF RESEARCH ETHICS AMONG UNDERGRADUATE SCIENCE EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN MINNA METROPOLIS

Idris Umar Sarkin Bauchi1 +2348065378781 haumar2008@gmail.com

Abdulrahman, Mohammed Alfa2 +2348036316284

Ezeamagu Mary Ugochukwu2 , +2348068978255, maryezeama@gmail.com

Aderinto Murtala Olalere3 +2348035617579 moladerinto2007@yahoo.com

**1&2** DEPARTMENT OF SCIENCE EDUCATION, SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION ,FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

**2&3**EDUCATIONAL RESEARCH, MEASUREMENT AND EVALUATION UNIT, DEPERTMENT OF SOCIAL SCIENCES EDUCATION, FACULTY OF EDUCATION, UNIVERSITY OF ILORIN, KWARA STATE

**BEING A PEPER PRESENTED AT THE 17TH ANNUAL CONFERENCE OF THE ASSOCIATION OF EDUCATIONAL RESEARCHERS AND EVALUATORS OF NIGERIA (ASSEREN) FROM 10TH -14TH JULY, 2017 AT UNIVERSITY OF JOS, PLATEU STATE.**

**Abstract**

*Ethical Consideration is paramount to every profession, let alone the education enterprise. Educational research as an embodiment of applied research uses human subjects in most cases to identify and propound solutions to certain educational problems. Students at higher level of education are expected to be conversant with research ethics to ensure credibility, precision, objectivity and quality. This paper presents a survey of awareness and of research ethics among undergraduate researchers in tertiary institutions in Minna, Niger State. The study adopted descriptive survey design, and the population comprised all graduating science education students in the tertiary institutions within the metropolis. Simple random sampling technique was used in the selection of 100 final year students from the two institutions running science education programme in the metropolis. Research Ethics Awareness and Implementation Questionnaire was developed, validated and used for data generation. Five research questions were raised and answered using frequency counts simple percentages. The results indicated that majority of the graduating science education students have positive perception of the research ethics for being ethical in nature, but were not fully aware of the existing published research ethics standards in education to be adhered to in research. It is recommended among others that more emphasis should be laid on research ethics in educational research courses offered by the students in their respective institutions to keep students abreast of the published ethics standards in research.*

*Keywords: Research ethics, quality research, ethical standards*

**Introduction**

For centuries, scientific investigations have been on board in different disciplines ranging from sciences, social sciences and arts with tremendous achievements that led to the contemporary advancements in science and technology. This was possible in part, because of the quality of the researches conducted. Whenever quality is mentioned in a research, definitely adherence to ethical standards suffices.

Research is seen as the formal systematic application of scientific method to the study of problems (Gay, Mills & Airasian, 2009). It is also defined as careful inquiry through search for new facts in any field of knowledge (Owolabi, 2015). Thus educational research can be viewed to be systematic application of scientific methods to the study of problems relating to education in general (Gay, Mills & airasian, 2009). The major theme in research is the finding out of facts which has to be systematic , logical and objective. Great number of studies in education involve description of natural social phenomena that have to do with teaching and learning. Also, such studies resulted in the generation of information about the factors predicting outcomes with social, economic and political relevance (Owolabi,2015).Thus, research is an activity that requires utmost carefulness, precision, truthfulness and objectivity which are capable of influencing quality and in turn, positively affect the society at large.

Ethical considerations are paramount to all research studies in order to safeguard its quality. Ethics simply refers to the moral principles of guiding conduct held by a group or professionals (Wellington, 2000). It is an outstanding attribute of any given profession as it helps sanitize general activities and conducts of professional. Human subjects are to be treated with caution in any study as they have rights that should not be violated in any way before, during or after investigation. This underscores the importance for ethical standards in educational research as to have mutual understanding and smooth data generation in research. Ethical standards in research is a new dimension as far as educational research is concerned. It is obvious that even up to1979, people are not much aware of ethical concerns in educational researches (Punita, 2013). Historically, the development of ethical standards in research can be attributed to the initial efforts of the American Educational Research Association (AERA) in 1992 that produced ethical standards which was revised in 2000. It was followed by British Educational Research Association (BERA) in 1992 also that was endorsed in 2004, and Scottish Educational Research Association (SERA) in 1997 updated in 2005 (Punita, 2013). In addition to the international associations mentioned, American Psychological Association (APA) has also produced “Ethics Code” for psychologists and relevant researchers. It contained five ethical principles which are beneficence and nonmaleficence, fidelity and responsibility, integrity, justice, respect for dignity and right (APA,1992). In Nigeria, the prominent ethical standard is that of the National Health Research Ethics Committee (NHREC,2007). It was a committee under the auspices of the Federal Ministry of Health which primarily caters for health related studies. The basic contents of these established ethical standards include informed consent, privacy, confidentiality, avoidance of harm, deceit to mention but a few.

The importance of ethics in research can never be over emphasized. Ethical norms promote research aims and objectives, collaborative work, accountability, variety of important moral and social values and builds public trust (David & Resnik, 2015). Ethical lapses in research and other aspects of human life can harm students and the public as it can lead to invalid data generation and wrong decision (David & Resnik, 2015). To avert these consequences, it is therefore pertinent for both old and novice researchers to fully get acquainted with the ethical standards in research. The question remains that, despite these established standards and much emphasis made in several educational research textbooks and other resource materials, are the researchers in tertiary institutions, most especially novice among them, fully aware of these standards and are applying them in their daily research studies? This is one of the motives of this study which was set to survey undergraduates awareness of research ethics in tertiary institutions in Minna metropolis.

**Research Questions**

The following research questions were raised to guide the study:-

1. Are the science education undergraduate students in Minna aware of international research ethical standards ?

2. Are the science education undergraduate students in Minna aware of APA general principles of research ethics?

3. Are the science education undergraduate students in Minna aware of researchers responsibility to users of their findings?

4. Are the science education undergraduate students in Minna aware of Researchers responsibilities to areas of research?

5. Are the science education undergraduate students in Minna aware of researchers responsibilities to research community?

 **Methodology**

The design of the study was descriptive survey. The population comprised all final year (264) science education students conducting final year projects in the two higher institutions running science education programs within the metropolis which are Federal University of Technology Minna and college of Education Minna. The samples consisted of 100 final year (graduating) students randomly selected from the population comprising 56 males and 44 females. The instrument used was researchers’ constructed questionnaire tagged Awareness of Research Ethics Questionnaire (AREQ). It contained six dimensions, namely awareness of research ethical standards, general APA principles of research, responsibilities to users of findings, responsibilities to the area of research and lastly, awareness of responsibilities to the community The instrument was validated by two experts in Science Education Department, Federal university of Technology Minna. It was subjected to pilot testing using 20 students not sampled. The Cronbach Alpha formula was used to compute internal consistency coefficient. It yielded 0.79 coefficient which signifies substantial reliability. The final draft questionnaire containing 20 items was distributed to the subjects after duly gaining access to the subjects through the authority. Data collection lasted for a week and all questionnaires were retrieved. Data were analyzed using frequency counts and simple percentages.

**Results**

Research Question 1: Are the science education undergraduate students in Minna aware about international research ethical standards ?

**Table 1:** Students Awareness of the International Research Ethics

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **S/N** | **ITEM** | **VA** | **A** | **N** | **U** | **VU** | **TOTAL** | REMARK |
| 1 | Research ethics is simply about morals in research | 15 (30%) | 30(60%) | 5(10%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 2 | APA, BERA, AERA, SERA are the prominent associations that produced research ethical standards | 5(10%) | 10(20%) | 3(6%) | 20(40%) | 12(24%) | 50(100%) | Unaware |
| 3 | National Health Research ethics Committee of Nigeria (NHREC) is one of the prominent body in Nigeria with a standard research ethics | 0(0%) | 0(0%) | 2(4%) | 31(62%) | 17(34%) | 50(100%) | Unaware |
| 4 | There are existing research ethics committees in various tertiary institutions in Nigeria | 10(20%) | 22(44%) | 4(8%) | 9(18%) | 5(10%) | 50(100%) | Aware |

Table 1 reports students’ responses on their awareness of research ethics producers. About 90 percent of the students were aware that research ethics is about morals. But about 64 percent of the students are not aware of the international associations that champion the production of ethical standards or guidelines in research. About 96 percent of the respondents are unaware of the national associations that produced standard code of ethics in research in Nigeria. This simply revealed that majority of the students are not fully aware of the existing published ethical standards in research in education.

**Research Question Two**

Are the science education undergraduate students in Minna aware of APA general principles of the research ethics?

**Table 2:** Students’ Awareness Of The APA General Principles Of Research Ethics

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| --- | --- | --- |
|  |  |  |
| **S/N** | **ITEM** | **VA** | **A** | **N** | **U** | **VU** | **TOTAL** | **REMARK** |
| 5 | Researcher should make sure that subjects of study are benefited not harmed | 20(40%) | 23(46%) | 1(2%) | 6(12%) | 0(0%) | 50(100%) | Aware |
| 6 | Researcher should be aware of responsibilities to society and communities he works with | 28(56%) | 20(40%) | 2(4%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 7 | Researcher promotes accuracy, honesty, and truthfulness in science teaching and practice of psychology | 11(22%) | 33(66%) | 4(8%) | 2(4%) | 0((0%) | 50(100%) | Aware |
| 8 | Researcher should not cheat, engage in fraud or misinterpret facts | 25(50%) | 20(40%) | 5(10%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 9 | Researcher should ensure justice among subjects in procedures, processes and services | 30(60%) | 18(36%) | 2(4%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 10 | Researcher should respect dignity and worth of people as well as the right to privacy, confidentiality and self determination | 25(50%) | 24(48%) | 0(0%) | 1(2%) | 0(0%) | 50(100%) | Aware |

Table 2 reports the students’ awareness of APA general principles of research ethics. It appears that majority of the students were aware of research ethical considerations of APA ranging from not harming the subjects of study (86%), responsibilities to the community (96%),honesty and truthfulness (88%), not to cheat or to be fraudulent (90%) to being respectful and confidential(98%).

**Research Question 3**

Are the science education undergraduate students in Minna aware of researchers’ responsibility to users’ of findings?

**Table 3:** Students’ Awareness Of Researcher’s Responsibility to Users Of Findings

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| --- | --- | --- |
|  |  |  |
| **S/N** | **ITEM** | **VA** | **A** | **N** | **U** | **VU** | **TOTAL** | **REMARK** |
| 11 | Researcher has responsibilities to teachers, school administration and policy makers | 5(10%) | 18(36%) | 2(4%) | 20(40%) | 5(10%) | 50(100%) | Unaware |
| 12 | Research studies should provide solutions to classroom problems | 33(66%) | 16(32%) | 1(2%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 13 | Research studies should be able to support policy makers with dependable data bases for planning and execution | 13(26%) | 15(30%) | 3(6%) | 10(20%) | 9(18%) | 50(100%) | Aware |

Table 3 reveals the students’ awareness of researcher’s responsibilities to the users of results. It appears that the respondents are aware of the facts that researcher is responsible of providing solutions to classroom problems( 98%) and providing dependable databases for planning by the policy makers (56%) but unaware of the researchers responsibilities to teachers, administrators and policy makers.

**Research Question 4**

Are the science education undergraduate students in Minna aware of Researcher’s responsibilities to areas of research?

**Table 4:** Students’ Awareness Of Researchers Responsibility To Areas Of Research

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **S/N** | **ITEM** | **VA** | **A** | **N** | **U** | **VU** | **TOTAL** | **REMARK** |
| 15 | Researcher is expected to select appropriate area of study | 20(40%) | 22(44%) | 8(16%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 16 | Researcher should go through works already done in area to be replicated | 16(32%) | 30(60%) | 10(20%) | 2(4%) | 2(4%) | 50(100%) | Aware |
| 17 | Researcher should justify the expenditure of study | 10(20%) | 12(24%) | 20(40%) | 8(16%) | 0(0%) | 50(100%) | Aware |

Table 4 reports students awareness of researcher’s responsibility to the areas of research. It shows that they were aware of the fact that researcher is responsible of selecting appropriate area of study (62%), visiting related previous works (92%) and justifying research expenditure to guide subsequent researches (44%) as against 16% respondents that were unaware.

**Research Question 5**

Are the science education undergraduate students in Minna aware of researcher’s responsibilities to research community?

**Table 5:** Students’ Awareness Of Researchers’ Responsibilities to the Community

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| **S/N** | **ITEM** | **VA** | **A** | **N** | **U** | **VU** | **TOTAL** | **REMARK** |
| 18 | Researcher should be ready to give out raw data on demand of the community | 10(20%) | 13(26%) | 25(50%) | 2(4%) | 0(0%) | 50(100%) | Neutral |
| 19 | Researcher should be unbiased in sampling subjects of study | 22(44%) | 27(54%) | 1(2%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 20 | Dishonesty , fake practices, plagiarism, concealing facts, misinterpretation of ideas; should be avoided by researcher | 33(66%) | 17(34%) | 0(0%) | 0(0%) | 0(0%) | 50(100%) | Aware |
| 21 | Researcher must try his best to protect integrity of educational research | 28(56%) | 21(42%) | 1(2%) | 0(0%) | 0(0%) | 50(100%) | Aware |

Table 5 reports awareness of the students of researchers’ responsibilities to the community. It shows that they are aware of basic researcher’s responsibilities except giving out raw data when demanded by the community which shows neutral stand with 50 percent and awareness with 46 percent.

**Discussion of Results**

The aim of the study was to survey science education students’ awareness of the research ethics in Minna metropolis. The first research question was answered by table1 which indicated that majority of the students were aware that research ethics is about morality in research. This position is in line with the definition of Wellington (2000) who sees ethics as moral principles of guiding conducts which are held by a group or professionals. But about 64 percent of the students were not aware of the international associations that champion the production of ethical standards or guidelines in research such as BERA, APA, AERA, SERA etc which contributed immensely in educational research (Punita, 2013). About 96 percent of the respondents were unaware of the national associations that produce standard code of ethics in research in Nigeria but aware that research ethics committees exist in tertiary institutions of Nigeria. This simply revealed that majority of the students are not fully aware of the existing ethical standards in research produced by those associations. They could have used the advantage of the influence of societal norms and values inculcated in them in their up-bringing to respond to such ethical issues in research. Because, most of the ethics mentioned are morally inclined in such a way that any adult individual that comes across them would ordinarily agree with them as virtues.

The Second research question was answered in table two and it appeared that majority of the students were aware of the APA general ethical principles which include beneficence and nonmaleficence, fidelity and responsibility, justice, integrity and lastly, respect peoples’ right and dignity as explained by APA (2002) as the basic ethical principles in research. From the responses, it is clear that the students could have learnt about the ethics from their institutions not from the published international standards. It is possible that they did not learn about such principles, but as ethical and moral as the principles appear to be, they were able to reason and responded positively in agreement with the ethics.

The third research question was answered in table 3, it appears that majority of the students were abreast of the researcher’s responsibility of providing solutions to classroom problems and providing dependable databases for planning by policy makers as enshrined in BERA (2011), APA(2002) and highlighted by Punita (2013).

The fourth research question was answered in table 4, it shows that majority of the respondents were aware of researcher’s responsibility of selecting appropriate areas in research, visiting related previous works and justifying research expenditure as prescribed by APA (2002) in its ethics code guidelines. Despite the fact that they are unaware of the existence of the guidelines, it shows that the knowledge they have from other sources is in conformity with the standards.

The fifth research question was answered in table 5, which shows that the respondents were aware of the basic researcher’s responsibilities to the community except giving out raw data when demanded by the community which shows neutral stand with 50 percent . This shows that they were not fully aware of the rights of the subjects and the public to lay hand on any generated raw data and results of study as may be demanded. In other words, this indicates that they are lacking full knowledge of some aspects of researcher’s responsibilities to participant precisely, openness and disclosure to participant as prescribed by BERA (2011) guidelines.

**Conclusion**

From the results of this study, it can be concluded that the respondents exhibited some level of knowledge of research ethics in conformity with the available international research ethics standards. But it is evident that most of the students are not aware of the existence of the international research ethics standards as mentioned in this context. Therefore, moral nature of the ethics could have influenced their responses.

 **Recommendations**

Based on the findings of this study, it is recommended that:-

1. International research ethics standards should be taught in schools where educational research is taught as a core education course.

2. Project supervisors, heads of departments and other administrators should make sure that students are evaluated in projects based on adherence to research ethics.

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**APPENDIX**

**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**

**SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION,**

**DEPERTMENT OF SCIENCE EDUCATION**

 **RESEARCH ETHICS AWARENESS QUESTIONNAIRE(AREQ)**

**INTRODUCTION**

Dear student, this is an instrument titled research ethics questionnaire to solicit for your response on how aware are about research ethical standards. All responses will kept confidential anonymous, therefore, feel free and respond with great sense of sincerity as doing so will go a long way in helping this study which is geared towards improving the quality of educational research in our institutions.

Thank you

Yours faithfully

Idris Umar Sarkin Bauchi

Abdulrahman, Mohammed Alfa

Ezeamagu Mary Ugochukwu

Aderinto Murtala Olalere3

**SECTION A BIODATA**

DEPARTMENT ……………………… LEVEL ………………..

GENDER ……………………. AGE …………………

**SECTION B**

**INSTRUCTION**

Respond to items by clicking the appropriate level of your awareness from the options given which range from Very Aware(VA), Aware (A), Neutral (N), Unaware (U) and Very Unaware (VU),respectively.

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| AWARENESS ABOUT RESARCH ETHICAL STANDARDS |
| S/N | ITEM | VA | A | N | U | VU |
| 1 | Im aware of the concept of research ethics |  |  |  |  |  |
| 2 | Research ethics is all about dos and donts of research studies |  |  |  |  |  |
|  | Research ethics must be adhered to when conducting any research |  |  |  |  |  |
| 2 | APA, BERA, AERA, SERA are the prominent associations that produced research ethical standards |  |  |  |  |  |
| 3 | National health research ethics Committee of Nigeria (NHREC) is the prominent body in Nigeria with a standard research ethics |  |  |  |  |  |
| 4 | There are existing research ethics committees in various tertiary institutions in Nigeria |  |  |  |  |  |

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| AWARENESS OF GENERAL APA PRINCIPLES OF RESEARCH |
| S/N | ITEM | VA | A | N | U | VU |
| 5 | Researcher should make sure that subjects of study are benefited not harmed |  |  |  |  |  |
| 6 | Researcher should be aware of responsibilities to society and communities he works with |  |  |  |  |  |
| 7 | Researcher promotes accuracy, honesty, and truthfulness in science teaching and practice of psychology |  |  |  |  |  |
| 8 | Researcher should not cheat, engage in fraud or misinterpret facts |  |  |  |  |  |
| 9 | Researcher should ensure justice among subjects in procedures, processes and services |  |  |  |  |  |
| 10 | Researcher should respect dignity and worth of people as well as the right to privacy, confidentiality and self determination |  |  |  |  |  |

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| AWARENESS OF RESPONSIBILITIES TO USERS OF FINDINGS |
| S/N | ITEM | VA | A | N | U | VU |
| 11 | Researcher has responsibilities to teachers, school administration and policy makers |  |  |  |  |  |
| 12 | Research studies should provide solutions to classroom problems |  |  |  |  |  |
| 13 | Research studies should be able to support policy makers with dependable data bases for planning and execution |  |  |  |  |  |

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| AWARENESS OF RESPONSIBILITIES TO THE AREA OF RESEARCH |
| S/N | ITEM | VA | A | N | U | VU |
| 14 | Researcher is expected to select appropriate area of study |  |  |  |  |  |
| 15 | Researcher should go through works already done in area to be replicated |  |  |  |  |  |
| 16 | Researcher should justify the expenditure of study |  |  |  |  |  |

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| AWARENESS OF RESPONSIBILITYIES TO THE COMMUNITY |
| S/N | ITEM | VA | A | N | U | VU |
| 17 | Researcher should be ready to give out raw data on demand of the community |  |  |  |  |  |
| 18 | Researcher should be unbiased in sampling subjects of study |  |  |  |  |  |
| 19 | Dishonesty , fake practices, plagiarism, concealing facts, misinterpretation of ideas; should be avoided by researcher |  |  |  |  |  |
| 20 | Researcher must try his best to protect integrity of educational research |  |  |  |  |  |