Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

Level of Awareness and Participation in Scientific Ethical Practices among Science Education Teachers in Secondary Schools in Okigwe Education Zone of Imo State, Nigeria

Chidebe Chijioke Uwaleke, PhD[1] ,Christian Sunday Ugwuanyi, **PhD**[2] , Oluchi Esther-Jane Uwaleke **PhD**[3] **&**

Onwurah Chrysantus Chinyere PhD

[1]Department of Science Education, Faculty of Education,
Alex Ekwueme Federal University Ndufu-Alike, Ebonyi State, Nigeria
Email: uwalekechidebe11@yahoo.com; ,
Mobile: +2348064253844

[2]Department of Childhood Education, Faculty of Education,
University of the Free State, Bloemfontein, South Africa
Email: Christain.ugwuanyi@unn.edu.ng

[3]General Outpatient Unit, Family Medicine Department
Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State, Nigeria

Department of Health Promotion and Public Health Education, Nnamdi Azikiwe University,

Awka, Anambra State, Nigeria

Abstract

This research investigated the science education teachers' level of awareness and participation in ethical practices in secondary schools in Okigwe education zone of Imo state, Nigeria. Survey research design was used for the study . Two research questions guided the study. A researcher developed instrument titled "Science education teacher's participation in ethical practices questionnaire" (SETPEPQ) was used for data collection. 407 science teachers, which was the total number of secondary school science teachers in Okigwe Education zone of Imo state, Nigeria, serves as the population of the study. *150 science teachers (Physics, Chemistry, Biology and Basic Science) were used in this study through a purposeful sampling technique. Mean and standard deviation were used to answer the research questions. The study, discovered among others that majority of science subject teachers in secondary schools in Ekigwe Education zone of Imo State, Nigeria are aware of the ethical practices expected of them.. Based on the findings of the study, it was recommended among others that, all the relevant stakeholders in education sector should as a matter of urgency enforce the ethical practices among science education secondary school teachers in Okigwe education zone of Imo State, Nigeria.*

Kay words: Science education teachers, Awareness and Participation, Ethical Practices, Secondary schools

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

Introduction

Science students at secondary school level in Nigeria and mostly those at Okigwe education zone of Imo state Nigeria, has not been doing very well academically over the years whereas the teachers teaching science-based subjects have been doing their best towards ensuring that students' academic performance improve yet the issue of low performance keeps coming up. This low performance was confirmed by the West African Examinations Councils (WAEC) Chief examiners report between 2022-2025 which stated that the rate at which science students performed in their WAEC examinations results, are unacceptable (WAEC, 2022-2025). This problems of poor performance by science students has been attributed to so many factors which include; lack of qualified teachers, large class size, poor infrastructure, poor funding of schools, among others. These factors have been carefully looked into by stakeholders, yet the problems keep reoccurring.

This continues low success rate in science subjects in WAEC and other external examinations over the years has also been attributed to other factors which ethical practices by science subject teachers in secondary schools were not left out.. Ethics refers to the system of moral principles, rules, and professional standards that govern the conduct of scientific research to ensure accuracy, integrity, and safety. It focuses on maintaining trust, preventing misconduct like fabrication or plagiarism, and protecting human and animal research participants. Key principles include honesty in data reporting, objectivity, transparency, and social responsibility. Integrating ethics into science education is essential for teaching responsible research practices, covering topics like data integrity, social responsibility, and bioethics to prepare students for modern STEM challenges (Resnik, 2020).

Key Principles of Scientific Ethics

Integrity & Honesty: Reporting data, results, methods, and publication status honestly, avoiding fabrication, falsification, or misrepresentation.

Objectivity: Striving to avoid bias in research design, data analysis, and interpretation

- **Respect for Subjects:** Protecting human dignity, privacy, and safety; obtaining informed consent, and ensuring humane care for animals.
- **Transparency & Openness:** Sharing data and findings, and being open to criticism and new ideas.

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

- **Intellectual Property Protection:** Honoring patents, copyrights, and using proper citation to avoid plagiarism.
- **Social Responsibility:** Striving to promote social good and prevent harm to society and the environment through research. (Janari, 2024)

Why Scientific Ethics Matter

- **Reliability of Research:** Ensures that scientific knowledge is accurate, verifiable, and trustworthy.
- **Public Trust:** Maintains public confidence in science, ensuring that research is conducted safely and ethically.
- **Preventing Harm:** Protects research subjects (both human and animal) from harm and ensures safety in experimental procedures.
- **Professional Integrity:** Promotes a culture of high standards within the scientific community, preventing fraud and promoting accountability.

Common Ethical Breaches

- **Fabrication/Falsification:** Making up data or manipulating research materials.
- **Plagiarism:** Using another person's work or ideas without credit.
- **Conflicts of Interest:** Allowing personal, financial, or political interests to bias research.
- **Negligence:** Unsafe lab practices or improper, reckless experimentation. (Floridi, 2019)

According to the Global Research Council. (2025), Scientific ethics are essential for maintaining the integrity of the scientific process and for ensuring that advances in knowledge positively contribute to society. Some science teachers may intentionally or unintentionally get associated with some unethical practices during teaching. Some of those unethical practices most science teacher engages on includes; infliction of punishment on students; illegal collection of money from students to help them during examinations; encouraging students to involve in examination malpractices, manipulations of data or results during practical examinations, stealing of practical apparatus from the school science laboratories, sending the students outside the school premises during unauthorized periods,

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630
and lots more. Some of these unethical practices by secondary school science teachers may affect the student's performances in school. This is because according to Akisola (2022), if students spend their time unnecessarily in attending to things not directly related to their academic's activities, it would surely make their performance to be poor.

Ethics is broadly defined as a system of moral principles that govern the conduct of individuals and institutions, delineating what is considered right or wrong, just or unjust (Saxena. 2019).). In the context of science, ethics refers to the norms and standards that guide researchers in ensuring integrity, accountability, and respect for the broader impact of their work (Resnik, 2020). Scientific ethical practice does not only promotes the reliability of research findings but also upholds public trust and safeguards societal interests (Shamoo & Resnik, 2015).

Ethics is a branch of philosophy concerned with what ought to be done; specifically, it is concerned with what is morally right or wrong in a given situation. Ethics can also be seen as a code of guided principle made for a specific body or profession.

Science education is a concept of teaching and learning of science subjects. As we know, science education in Nigeria, is taught at junior secondary school level as basic science. Then at senior secondary school levels it is taught as physics, chemistry and biology. And in the process of teaching and learning of these science subjects, there are expected ethical practices expected of both the teachers and the students in other to achieve the specific objective of the learning and a good ethical practices by a science teacher, makes a science teacher a good professional science teacher (Jones, McKim. & Reiss, 2010). Any unethical practice applied by the science teacher will directly or indirectly affect the students.

It is a fact that unethical behavours by a teacher or within the education sector has a lot of negative implication in our educational system. Those unethical behaviours by teachers are among what has put our educational sector into jeopardy today hence student's performance all through continues to be poor and unacceptable. The quest for good ethical practices by the teachers is what gave birth to the teacher's registration council of Nigeria (TRCN). This professional teacher's regulatory body has played a significant roll in regulating the activities of teaching profession in Nigeria. In the eighties (1980s) to early nineties (1990s) there was no regulatory body to regulate the activities of teaching profession in Nigeria. Before then anybody who has no job after graduating from school will just jump into teaching profession without being a qualified professional teacher. Whereas teaching is meant for those who are

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

trained to be teachers with requisite certificates. Thus in 1993, the TRCN was established by Act No. 31 of 1993. This noble teaching regulatory body was statutorily given the responsibility to embark on a rapid transformation in the teaching profession to the highest possible standard. Among the core mandate of the TRCN are: look into the quality of teachers; the education programmes, professional conducts, registration and licensing, and overall quality standard of our teachers and their quality at all level of education system.

Considering the value and importance of teachers to development of the society and the country at large, the TRCN now swiftly went producing a law whish contains all the rules, principles and regulations and ethics guiding teaching profession in Nigeria. Hence the code of conduct was officially presented in the year 2004 juts to eradicate quackery form the teaching profession. This code of conduct produced by the TRCN was deduced from the UNESCO/ ILO recommendations for a standard code of conduct which has nine chapters.
The major contents of the code of conducts by the TRCN includes:

1. Extortion from students
2. Money for marks racket
3. Teaching with non-qualified or unrecognized certificates
4. Teaching without registration with TRCN
5. Wearing scandalous clothes, smoking, drinking and all sorts of such attitude before the students
6. Forgery or mutilation of official documents
7. Fighting in or within the school premises
8. Assaulting a student or teacher
9. Intimidation of students
10. Absenteeism
11. Taking undue advantage of students' teachers
12. Facilitating, aiding, abetting or being an assessor to exam malpractice
13. Irregular or unauthorized award of marks

In the views of Agih (2013), teaching profession won't meet its aims and objectives if there is no statutory ethical codes and practices guiding the teachers and the teaching profession. The code of conduct is what will guide the science teacher to inculcate good values, integrity,

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

professionalism, into the students. If ethics is lacking, the educational system will suffer an irreparable damage (Saxena, 2019).

In the light of the above, it has been established that ethics and good ethical behaviours plays a significant role in teaching profession in Nigerian and acquiring a good ethical values by a science subject teacher will help the teacher practice his teaching profession effectively thereby inculcating a positive life, knowledge and values to the students they taught. Hence this study ascertained the science education teachers' level of awareness and participation in ethical practices in secondary schools in Okigwe Education Zone of Imo State, Nigeria

Purpose of the study

The purpose of this study was to:

1. Determine the level of secondary school science subject teacher's awareness of ethical practices in Okigwe Education Zone of Imo State, Nigeria
2. Determine the level of secondary school science subject teacher's participation in unethical practices in Okigwe Education Zone of Imo State, Nigeria

Research Questions

The following research questions guided the study:

1. What is the level of secondary school science subject teacher's awareness of ethical practices in Okigwe education zone of Imo State, Nigeria?
2. What is the level of secondary school science teacher's participation in unethical practices in okigwe education zone of Imo State, Nigeria?

Method

Descriptive survey research design is adopted in this research. The population of the study comprised of 407 science teachers, which was the total number of secondary school science subject teachers in Okigwe Education zone of Imo state, Nigeria.. 150 out of the 407 secondary school science teachers was the sample used in this study. The sample was composed in multi- stages. A questionnaire titled "Science education teacher's participation in ethical practices questionnaire" (SETPEPQ) was the instrument used for data collection.

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

The SETPEPQ has three sections: A, B and C. Section A was to get the personal details of the respondents. Section B was a twelve (12) item statement where some ethical issues for science teachers were presented, and section C was made up of thirteen (13) items which comprises of the professional ethical practices of the conducts of secondary school science teachers.

Five (5-point) rating scale was used which ranges from Very High Level (VHL) = 5 points, High Level (HL) = 4 points, Moderately Level (ML) = 3 points, Little Level (LL) = 2 points and Very Little Level (VLL) = 1 point for respondents to specify their level of agreement with the stated items. The mean score of 3.0 and above shows high level while mean score below 3.00 shows little or low level of agreement with the item statements**.**

Results

Mean and standard deviation was used to analyze the data collected for the two research questions and the results were presented thus:

Research Question 1

What is the level of secondary school science subject teacher's awareness of ethical practices in Okigwe education zone of Imo State, Nigeria?

Table 1: Mean and standard deviation of secondary school science subject teachers' responses on their level of awareness of the ethical practices expected of them

S/No	Secondary school science teachers' level of awareness of ethical practices expected of them	Number	Mean	SD	Decision
1	Teaching without registration with TRCN	150	2.98	3.42	LL

2	Teaching with unrecognized certificate	150	2.70	3.34	LL
3.	Collection of cash to award marks	150	3.97	2.20	HL
4	Forgery or mutilation of official documents	150	3.16	1.38	HL
5	Fighting within the school premises	150	3.82	1.20	HL
6	Abusing or assaulting the students	150	3.06	1.19	HL
7	Intimidation and taking undue advantage of students	150	3.69	1.27	HL
8	Absenteeism from school or lesson	150	3.10	2.34	HL
9	Involvement in occultic activities in school	150	4.05	0.83	HL
10	Facilitating, aiding, abetting or assessor to Examination malpractice	150	2.93	2.16	LL
11	Irregular or unauthorized award of marks	150	2.85	1.23	LL
12	Extortion from students	150	3.85	1.18	HL

The result as shown in table 1. above shows the mean scores of the 12 items describing the level of secondary school science teacher's awareness of the stated ethical practices. The results also confirmed that truly secondary school science teachers have high level of awareness on majority of the specified ethical practices expected of them as shown in table 1. This can be seen from the mean scores of items number 3, 4, 5, 6, 7, 8, 9 and 12 which are all higher than the cut-off points of 3.0. The secondary school science teachers have low level of awareness in only few items like that of number 1, 2, 10 and 11 which have mean scores less than 3.00-points.

Research Question 2.

What is the level of secondary school science teacher's participation in unethical practices in okigwe education zone of Imo State, Nigeria?

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

Table 2: Mean and standard deviation of secondary school science teachers' responses on the level of their participation in these items of ethics of their science teaching profession adjudged as misconduct

S/No	Secondary school science teachers' level of participation in these unethical practices not expected of them	No.	Mean	SD	Decision
In our school, science teachers are involved in:					
1	Fighting before students	150	1.72	1.22	LL
2	Quarrelling before students	150	2.70	1.34	LL
3.	Teaching without the appropriate qualification	150	3.70	1.34	HL
4	Failure to prepare and teach assigned lesson effectively	150	3.97	1.20	HL
5	Bias to students in terms of sex, color, ethnic group Or religion	150	2.85	1.18	LL
6	Disrespect for learner's confidentiality disclosed to me	150	2.25	1.23	LL
7	Irregular or unauthorized award of marks	150	3.13	1.19	HL
8	Cultic activities in school	150	1.11	0.38	LL
9	Mating of corporal punishment without due authorization	150	3.82	1.20	HL
10	Involvement in influencing learners' ideology	150	3.66	1.19	HL

11	Engaging in bribery and corruption in schools	150	2.69	1.27	LL
12	Involvement in any form of examination malpractice	150	3.10	1.34	HL
13	Sexual harassment of students	150	2.0	0.83	LL

Results in table 2 shows that, to a large extent, secondary school science teachers' level of participation in items number 3, 4, 7, 9, 10, and 12 is high, since these items have mean scores greater than 3.00 which is the cut-off point. Whereas mean scores of items number 1, 2, 5, 6, 8, 11 and 13 have mean scores less than 3.00 which implies that secondary school science teachers' level of participation in these unethical practices is low.

Discussion

This research study has examined the science subject teachers' level of awareness of ethical and participation in unethical practices in secondary schools in Okigwe Education Zone of Imo State, Nigeria**.** Specifically, this study has proved that ethical practices expected of secondary science teachers' level of awareness is high. This finding corroborates the result of the study done by Janari, (2024), whose finding was that technology teachers and professional bodies knows about the professional ethical practices required of them to function appropriately in secondary school. Though, the finding of the study shows evidently that some of them has low level of awareness to the ethical practices expected of them.

The study also revealed that secondary school science subject teachers' level of participation in unethical practices are very low. This indicates that their participation level on the demands of science teachers code of conducts is highly commendable. Though a good number of science teachers indicated some kind of lackadaisical attitude to the demands of the code of conduct. This could be attributed to laziness, greed and anxiety that is on increase in our current society today. The finding of this study is inline with that of Bazzul, (2016) who opined that lack of ethical behaviors gets peoples attention easily, and such persons that acquires those unethical practices does things negatively and unethically.

However, these findings, according to (Akisola, 2022) are quite understandable and their reasons are not far-fetched. Even though teaching qualifies to be categorized as a profession

Unizik Journal of Educational Management and Policy (UJOEMP), Vol 7, No. 2, April, 2026. ISSN: 2276-7630

like those of Lawyers, medical doctors, Engineering and so on. It was not so recognized with the necessary regulations and laws until recently. In Nigeria, the teachers registration council (TRCN) is the body charged with the core responsibility of regulating, standardizing and licensing teachers was only made to be functional with an Act. No. 31 of 1993. When this is compared with those of other professions like Architects, Surveyors, Pharmacist, Lawyers, Medical Doctors and Engineers, that has been effectively been functioning in the country over the years. Therefor it is not surprising as it has to do with the reasons science subject teachers still possesses some level of non-compliance with the ethics and ethical practices of teaching profession.

Conclusion

From the results, it can be concluded that a good number of secondary school science subject teachers in Okigwe education zone of Imo state, Nigeria are much aware of the ethical practices expected of them, Though most of them are still indulging in some kind of unethical practices which has a negative implications in their career as professional science subject teachers.

Recommendation

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

1. All the relevant stakeholders in education sector should as a matter of urgency enforce the ethical practices among secondary school science teachers

2. Professional bodies like the Teachers registration council of Nigeria (TRCN) and Science teachers association of Nigeria (STAN) should as a matter of urgency make a copy of the teachers code of conduct more especially to the newly employed teachers. This will help to inculcate in them the expected professional practices required of them
3. There should be a through training and retraining of the practicing secondary school science teachers on the required ethical practices expected of them as professional science teachers.

4. Some of the science teachers who are already teaching without the required license and certificate should be given a specific time frame to get those license and certificates

References

Agih, A. A (2013). Extent of compliance to ethics of teaching profession by secondary school teachers in Bayelsa state. *Nigeria academic journal of interdisciplinary studies 2(3); 41-46*

Agbola 0.S (2025), science Education in Nigeria: The emergence, Challenges and Expectations" *An Inaugural Lecture Delivered at Oduduwa Hall, Obafemi Awolowo University, Ile-Ife, Nigeria On Tuesday, 25th February 2025*

Akisola, O. S (2022). Mathematics education and professional practices: A survey of mathematics teachers' professional practices. *Proceedings of the 62nd Annual conference of science teachers association of Nigeria (STAN)*

Bazzul, J. (2016). Ethics and Science Education: How Subjectivity Matters. Dordrecht: Springer,

Janari, T. (2024), Ethics in Science: Foundations, Contemporary Challenges, and Future Directions. *Online at https://mpra.ub.uni-muenchen.de/122926/ MPRA Paper No. 122926, posted 16 Dec 2024 14:17 UTC*

Jones, A., McKim, A. & Reiss, M. (Eds) (2010). Ethics in the Science and Technology Classroom: A New Approach to Teaching and Learning. Rotterdam: Sense

Floridi, L. (2019). *The ethics of artificial intelligence*. Oxford University Press.

Fischer, B. A., et al. (2014). Teaching research ethics: The case-study approach. *Science and Engineering Ethics, 20*(3), 687–706. https://doi.org/10.1007/s11948-013-9478-5

Floridi, L. (2019). *The ethics of artificial intelligence*. Oxford University Press.

Global Research Council. (2025). Integrated Methodological Frameworks for Emerging Research Landscapes. https://www.globalresearchcouncil.org/publications/methodology-2025-report

National Center for Education Statistics. (2025). Postsecondary research programs and methodology training. https://nces.ed.gov/programs/research-methodology

RAND Corporation. (2026). Applied research design and policy analysis methods. https://www.rand.org/research/research-design

Resnik, D. B. (2020). *Ethics in science: An introduction*. Cambridge University Press

Saxena, A. (2019). Ethics in Science: Pedagogic Issues and Concerns. Singapore: Springer Nature.

Shamoo, A. E., & Resnik, D. B. (2015). *Responsible conduct of research*. Oxford University Press

Thompson, R. (2025). Adaptive frameworks in longitudinal study designs. Journal of Research Methodology, 14(2), 45-58. https://doi.org/10.1016/j.jrm.2025.01.004

West African Examination Council (2022-1025) Chief examiners report.