



Influence of Ethics on Artificial Intelligence in Public Senior Secondary Schools in Obio/Akpor Local Government Area, Rivers State, Nigeria

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Abstract

The study investigated the influence of Artificial Intelligence Application in Teaching and Learning in Public Senior Secondary Schools in Obio/Akpor Local Government Area of Rivers State. The study made use of Social Learning Theory, descriptive survey research design; and a sample size of 300 respondents cut across senior secondary school classes from one to three (SS I - III) in ten schools in the area. The study also employed simple random sampling technique and stratified random sampling technique in determining the sample size. Data were collected using a compound structured questionnaire designed along Likert 4-point scale rating. Mean and standard deviation was used to analyse the research questions one sample independent t-test was used to test the hypotheses at 0.05 alpha level of significance. The result of the study revealed that ethics significantly influences artificial intelligence application in teaching and learning in Public Senior Secondary Schools in Obio/Akpor Local Government Area. Therefore, the study calls for the teaching of Ethics and Moral Education in the secondary schools in the state so that student will be able to apply it in this Artificial Intelligence driven world.

Keywords: Artificial Intelligence, Ethics, Obio/Akpor, Secondary School.

Introduction

The world has grown in size and complexity virtually in everything and field of human endeavour especially since the 20th century. This can be seen in science and technology, education, health, population, communication, industry etc. This growth has increased and eased the way human beings do things. One of such is Artificial Intelligence which is offshoot of science and technology. As the science and advancement of Artificial Intelligence develops, smart technologies are increasingly being deployed and will have profound ethical, psychological, social, economic, and legal consequences for human society and our planet. In the 21st century, advancements in science and technology have led to the development of computers that emulate human thought and behavior. This capability stems from the integration of artificial intelligence (AI), which enables machines to replicate human actions. To this end, AI has been defined by several authors. For instance, Baker and Smith (2019) defined it as

computers that carry out cognitive tasks like humans, especially in areas of learning and problem solving. Artificial intelligence systems use algorithmic structure to carry out cognitive or perceptual activities that were hitherto reserved for human reasoning, judgment, and thought (Leslie et al., 2021).

Additionally, Russell and Norvig (2010) describe AI as a system that is aware of its surroundings using sensors and interacts with actuators. Artificial autonomous agents are simply the next stage in the development of technology. Autonomous agents perceive, decide, and act on their own. It is increasingly clear that AI systems can be biased and that is a problem when they are put into roles of public trust, such as issuing criminal sentences or distributing welfare which could yield unequal treatment of the society member, based on their data-ful inherent biases and racial profiling. Hence the replacement of humans with these systems seems more dangerous than advantageous, in roles where the unique human mind is necessary. Ben Shneiderman, a University of Maryland renowned computer scientist who has for decades warned against blindly automating tasks with computers, stated that robots should collaborate with humans, rather than replace them (Markoff, 2020). Instead of trying to create autonomous robots, he advised that, “designers should focus on a new mantra, designing computerized machines that are reliable, safe and trustworthy”, with stringent monitoring on the human side. He stresses the need for public policy considerations that focus on technical and economic implications, and on the development of trustworthy and human-centered AI systems. Inspired by recent triumphs in machine learning applications, issues of the societal impacts, governance, and ethics of these technologies have led to a deluge of concern, research and attention from policy makers (Pery, 2020).

Furthermore, national education systems and the Legislature are also grappling with the new challenges resulting from constantly evolving technology. As Technology becomes much more sophisticated, this is having a substantial impact on the workforce. From Chatbots to driverless vehicles, AI has modernized various sectors globally such as healthcare, transportation, security, financial services, e-commerce and manufacturing (Valluri, 2017). These rapidly linked business areas, (leading to multiple linked algorithm, data-handling tools, and automated systems) are a leading current concern about technology’s potential for profound and disruptive societal transformation (Souter, 2019). With the challenges of increased population, urban density and changing consumer expectations, advanced data mining, coupled with the power of AI have the potential to transform our society and how society meets the needs of its communities.

Artificial intelligence promotes education, resulting in enhanced teaching, learning, and assessment strategies for teachers and students, and overall learning outcomes. The integration of robotics supported by AI in education has risen remarkably. This technology is now utilized by both educators and learners to facilitate the educational process, resulting in heightened student's engagement and enhanced safety. Given the current advancements in AI, the incorporation of robotics in education is becoming increasingly essential. Robots serve as valuable learning tools for both students and teachers, allowing for in-depth exploration of subjects without the risk of monotony (Atlantic Re: think, 2018). Artificial intelligence fosters the development of robots that enrich the educational experience across all levels, from early childhood to higher education. Timms (2016) noted that collaborative robots, or cobots, are being employed to assist in teaching children's fundamental tasks such as spelling and pronunciation, while adapting to individual student's capabilities. The role of AI in education is not to replace human instructors with humanoid robots, but rather to leverage computer intelligence to support both teachers and students, thereby enhancing the overall educational framework. In education, Artificial intelligence is used in intelligent tutoring systems, smart classroom technologies, adaptive learning methodologies, and pedagogical agents. Furthermore, artificial intelligence can facilitate adaptive learning experiences, tailoring the pace of instruction to align with each student's performance (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2022). Artificial Intelligence tools play a significant role in education, enhancing both teaching and learning experiences. It is in this respect that this study intends to investigate the influence of Ethics on Artificial Intelligence on Public Senior Secondary School in Obio/Akpor Local Government Area of Rivers State.

Aim and Objectives

The aim of the study is to investigate the influence of Artificial Intelligence in public senior secondary schools in Obio/Akpor local government area of Rivers State. The specific objectives are:

- i. Determine the influence of ethics on artificial intelligence usage among students of public senior secondary schools in Obio/Akpor Local Government Area.
- ii. Analyse the difference on ethnical influence of artificial intelligence between male and female students in public senior secondary schools in Obio/Akpor Local Government Area.

Research Questions

The following research questions were posited to guide the study:

- i. To what extent does ethics influence artificial intelligence usage among students of public senior secondary schools in Obio/Akpor Local Government Area?
- ii. Is there any difference between male and female students on the influence of ethics on artificial intelligence usage among students of public senior secondary schools in Obio/Akpor Local Government Area?

Hypotheses

The following hypotheses were formulated for the study.

- i. There is significant influence of ethics on artificial intelligence usage among students of public senior secondary schools in Obio/Akpor Local Government Area.
- ii. There is significant difference between male and female students on the influence of ethnics on artificial intelligence usage among students of public senior secondary schools in Obio/Akpor Local Government Area.

Conceptual Review

Concept of Ethics

Ethics is the philosophical study of moral phenomena. Also called moral philosophy, it investigates normative questions about what people ought to do or which behavior is morally right. Ethics involves learning what is right or wrong, and then doing the right thing but "the right thing" is not nearly as straightforward as conveyed. Most ethical dilemmas in the workplace are not simply a matter of yes or no. Its main branches include normative ethics, applied ethics, and metaethics. Normative ethics aims to find general principles that govern how people should act. Applied ethics examines concrete ethical problems in real-life situations, such as abortion, treatment of animals, and business practices. Metaethics explores the underlying assumptions and concepts of ethics Liu, et al (2020). It asks whether there are objective moral facts, how moral knowledge is possible, and how moral judgments motivate people. Influential normative theories are consequentialism, deontology, and virtue ethics. According to consequentialists, an act is right if it leads to the best consequences. Deontologists focus on acts themselves, saying that they must adhere to duties, like telling the truth and keeping promises. Virtue ethics sees the manifestation of virtues, like courage and compassion, as the fundamental principle of morality.

Ethics is closely connected to value theory, which studies the nature and types of value, like the contrast between intrinsic and instrumental value. Moral psychology is a related empirical field and investigates psychological processes involved in morality, such as reasoning and the

formation of character. Descriptive ethics describes the dominant moral codes and beliefs in different societies and considers their historical dimension.

The history of ethics started in the ancient period with the development of ethical principles and theories in ancient Egypt, India, China, and Greece. This period saw the emergence of ethical teachings associated with Hinduism, Buddhism, Confucianism, Daoism, and contributions of philosophers like Socrates and Aristotle. During the medieval period, ethical thought was strongly influenced by religious teachings. In the modern period, this focus shifted to a more secular approach concerned with moral experience, reasons for acting, and the consequences of actions. An influential development in the 20th century was the emergence of metaethics.

Concept of Artificial Intelligence

Artificial Intelligence (AI) is a branch of Science which deals with helping machines finding solutions to complex problems in a more human-like fashion. This generally involves borrowing characteristics from human intelligence, and applying them as algorithms in a computer friendly way. A more or less flexible or efficient approach can be taken depending on the requirements established, which influences how artificial the intelligent behaviour appears. AI is generally associated with Computer Science, but it has many important links with other fields such as Mathematics, Psychology, Cognition, Biology and Philosophy, among many others. Our ability to combine knowledge from all these fields will ultimately benefit our progress in the quest of creating an intelligent artificial being. AI is one of the newest disciplines. It was formally initiated in 1956, when the name was coined, although at that point work had been under way for about five years. However, the study of intelligence is one of the oldest disciplines. For over 2000 years, philosophers have tried to understand how seeing, learning, remembering, and reasoning could, or should, be done Rohan G. (2023).

The advent of usable computers in the early 1950s turned the learned but armchair speculation concerning these mental faculties into a real experimental and theoretical discipline. Many felt that the new "Electronic Super-Brains" had unlimited potential for intelligence. "Faster Than Einstein" was a typical headline. But as well as providing a vehicle for creating artificially intelligent entities, the computer provides a tool for testing theories of intelligence, and many theories failed to withstand the test. AI has turned out to be more difficult than many at first imagined, and modern ideas are much richer, more subtle, and more interesting as a result.

AI currently encompasses a huge variety of subfields, from general-purpose areas such as perception and logical reasoning, to specific tasks such as playing chess, proving mathematical theorems, writing poetry, and diagnosing diseases. Often, scientists in other fields move gradually into artificial intelligence, where they find the tools and vocabulary to systematize and automate the intellectual tasks on which they have been working all their lives. Similarly, workers in AI can choose to apply their methods to any area of human intellectual endeavour. In this sense, it is truly a universal field.

Theoretical Review

Social Learning Theory (Albert Bandura)

Social learning theory is a psychological theory of social behavior that explains how people acquire new behaviors, attitudes, and emotional reactions through observing and imitating others. It states that learning is a cognitive process that occurs within a social context and can occur purely through observation or direct instruction, even without physical practice or direct reinforcement. In addition to the observation of behavior, learning also occurs through the observation of rewards and punishments, a process known as vicarious reinforcement. When a particular behavior is consistently rewarded, it will most likely persist; conversely, if a particular behavior is constantly punished, it will most likely desist. The theory expands on traditional behavioral theories, in which behavior is governed solely by reinforcements, by placing emphasis on the important roles of various internal processes in the learning individual. Albert Bandura is widely recognized for developing and studying it.

Artificial Intelligence Theory

Artificial Intelligence Theory was not propounded by single person but was developed through the collective work of several pioneers, with Alan Turing being widely recognised as the theorist and “father of AI (1940-1950). Artificial Intelligence (AI) theory explores how machines simulate human intelligence through learning, reasoning and self correction. Core theoretical examples includes reactive machines (e.g. Deep Blue) and limited memory system (e.g. Self-driving cars) alongside future concepts like theory of mind. These models use algorithms to process data, recognize platforms, and make decision without explicit, step by step programming for every scenario.

Methodology

Study Area: Obio/Akpor Local Government Area

Obio/Akpor local government area is one of the two local governments that make up Port Harcourt metropolis that was created in 1987 out of Port Harcourt City Council. It has its

headquarters in Rumuodomanya. The local government is predominantly made of three clans which are Obio, Akpor and Aparara which are part of the Ikwerre ethnic nationality and consist of 45 communities and 17 political wards. The local government has about 23 public secondary schools and over 100 private secondary schools and a population size of over 500,000.000 people. The local government area consists of part of Trans-Amadi Industrial Layout of Port Harcourt with a variety of industries especially those of the petroleum industry. It harbours major oil exploration and production companies such as: Shell Petroleum Development Company Nigeria Ltd. (SPDC) Total Fina Elf, Nigerian Agip Oil Company (NAOC), Haliburton Energy Nigeria Ltd. Schlumber Nig. Ltd etc. The people of the area has rich cultural heritage. The LGA harbours some secondary and tertiary hospitals such as University of Port Harcourt Teaching Hospital at Alakahia, the Military Hospital at Rumuola and Neuro-psychiatry Hospital at Rumuigbo. The local government area is credited to have major the tertiary institutions in Port Harcourt metropolis such as the University of Port Harcourt at Choba, Ignatius Ajuru University at Rumuolumeni, Capital Elechi Amadi Polytechnic at Rumuola and Nigerian Law School at Rumueme. It also holds the three military formations in the state capital such as 82 Division of Nigerian Army at Rumuola, Nigerian Airforce at Rumuomasi and the Nigerian Navy (NNS Pathfinder) at Rumuolumeni.

Research Design

The study made use of descriptive survey research design which enables the researcher to collect data from a large population. In this respect, the researcher collected data from public senior secondary schools students. The data collected consisted of primary and secondary data. The primary data was collected using the research instrument while secondary were collected from textbooks, journals, magazines and past students' project and thesis.

Population

As at the time of the study, there are 25 public senior secondary schools in Obio/Akpor local government area which are: Community Secondary School Choba, Community Secondary School, Ogbogoro, Community Secondary School Ozuoba, Community Secondary School Rumuapara, Community Secondary School Oko-nu-odo, Community Secondary School Oginigba, Community Secondary School Rumuepirikom, Community Secondary School Rumuodomanya, Community Secondary School Rumuokwursi, Government Secondary School Elekahia, Government Girls Secondary School Rumuokwuta, Model Girls Secondary School Rumueme, Community Secondary School Mgbuosimini, Government Secondary School Eneka, Community Secondary School Rukpokwu, Government Technical College

Azubie, Community Secondary School Rumuomasi, Community Secondary School Elelenwo, Community Secondary School Rumuekini, Community Secondary School Olanada. As at the time of this study, the student population of this school is 103,561 of which 58,337 were boys while 45224 were girls.

Sample Size and Sample Techniques

The study made use of 300 students using a combination of purposive sampling technique quota sampling technique. The students consist of SS I to SS 3 class in which 100 students were drawn from each class. A sample size of 10 senior secondary schools were selected in which 30 students were selected per school and 10 students per class. The gender distribution of the students were 135 girls (45%) of the total students sampled and 165 boys (55%) of the total students. The 10 schools that were sampled were: Government Girls Secondary Rumuokwuta, Model Girls Secondary School Rumueme, Government Secondary School Eneka, Government Technical College Port Harcourt, Community Secondary School Ogbogoro, Community Secondary School Okoro-nu-odo, Community Secondary School Rumuomasi, Community Secondary School Oginigba, Community Secondary School Rumuekini and Community Secondary School Rumuapara.

Instrument for Data Collection

The study made use of a compound instrument known as Students Ethics Artificial Intelligence Questionnaire (SEAIQ) which consist of 3 parts which are socio-demographic background of the students, Ethics Variables and Artificial Intelligence Variable. The Ethics and Artificial Intelligence variables consist of 5 questions each, thus making a total of 10 questions. The instrument was validated by 2 experts in Measurement and Evaluation in the Department of Educational Psychology Guidance and Counselling at Ignatius Ajuru University of Education, Rumuoluemini, Port Harcourt and the reliability text was conducted using test re-retest method by applying Pearson Product Moment Correlation that produced a correlation coefficient of 0.78 (78%) which is high to be used for the study. The instrument was designed along Likert 4-point scale rating of Strongly Agree, (4-point) Agree, (3-point) Disagree (2-points) and Strongly Disagree (1-point) with a mean of 2.50

Method of Data Collection

The data was collected by the researcher with the use of the questionnaire in which one teacher for each schools was used to assist the researcher in collecting the data. The students were guided on how to fill the questionnaire.

Method of Data Analysis

The data were analysed using both descriptive and inferential statistics. The descriptive statistics include: simple percentage (that was used to analyse the socio-demographic background of the respondents). Mean and standard deviation to answer the research question. The descriptive statistics include one sample test and two independent t-test which were used to test the hypotheses at 0.05 level of significance. The results were presented in tables.

Results and Discussion

The results of the research questions is presented on Table 1:

Table 1: A Summary of Students responses on the influence of Ethics on Artificial Intelligence in Senior Public Secondary Schools

S/n	Ethics Section	SA	A	D	SA	x	SD	Decision
A	Ethics variables							
1	As a matter of morality, I do not use chat in determinations of test using Artificial Intelligence	126	68	57	49	2.51	0.95	
2	I refuse to use A.I. while my teacher is teaching in the class as a matter of respect	132	73	55	40	2.63	0.98	Agree
3	I put ethical consideration first when using Artificial Intelligence	141	69	58	32	2.78	1.10	Agree
4	My parents regulate my usage of Artificial Intelligence in my academic work as a mark of respect.	138	75	59	28	2.65	1.09	Agree
5	Morality and ethics should be included on how students should use Artificial Intelligence in secondary schools	140	78	63	19	2.97	0.98	Agree
B	Artificial Intelligence Variables							
6	Artificial Intelligence helps me to do my assignment effectively and efficiently at home	139	71	52	38	3.33	1.33	Agree
7	I learn more things about the topics my teachers teach me in their subjects from Artificial Intelligence.	145	81	62	12	3.01	1.30	Agree
8	I understand more from Artificial Intelligence than from my teachers in the class	147	77	48	28	2.99	0.99	Agree
9	Artificial Intelligence makes learning easy, reliable an dependence at all times	135	65	54	46	2.85	0.96	Agree
10	Artificial Intelligence should be incorporated into teaching and learning in secondary schools	148	79	56	17	3.10	1.08	Agree
						2.88	1.08	Agree

Source: Researcher's Fieldwork (2026)

The result in the above table shows a grand mean of 2.88 which implies that the research question is accepted because the grand mean value of 2.58 is higher than the criterion of 2.50. This result signifies that students' ethical behaviour influences their artificial intelligence usage in school. To this end, it can be inferred that the students have moral obligation in applying artificial application in their academic life which shapes the way the use artificial intelligence in their daily life, especially concerning their academic welfare and pursuit. This finding is in

agreement with Timms (2016) that observed similar thing among secondary school students in India.

Testing of Hypotheses

Null Hypothesis (Ho): There is no significant influence of ethics on artificial intelligence among public senior school students in Obio/Akpor Local Government Area.

Alternate Hypothesis (Ho): There is significant influence of ethics on artificial intelligence among public senior school students in Obio/Akpor Local Government Area.

The result of the hypothesis is presented in Table 2: A Summary of one sample independent t-tes on the influence of ethics on artificial intelligence among public senior school students in Obio/Akpor Local Government Area.

Variable	N	x	SD	Df	Calculated t	p-value	Alpha	Result	Decision
Ethics v Artificial	300	2.88	1.08	299	5.598	0.00	0.05	significant	Null rejected

Source: Researcher's Field work (2026)

The result of the one sample independent t-test conducted for the influence of ethics on artificial intelligent among public senior school students in Obio/Akpor Local Government Area reveals a sample size of 300 students with a mean of 2.88 and a standard deviation of 1.08 and a degree of freedom of 2.99. The result also revealed a calculated t of 5.598 and a probability value of 0.00 that is less than the chosen alpha level of 0.05. By this result, the null hypothesis is rejected while the alternate hypotheses is accepted. Therefore, the conclusion is that there is significant influence of ethics on artificial intelligence among public senior school students in Obio/Akpor Local Government Area of Rivers State. This result is in line with the findings of [UNESCO, 2022) on the impact of ethics on artificial intelligence among students.

Conclusion and Recommendation

Based on the findings of the study, it is evidently clear that ethics has significant influence of ethics on how secondary school students usage of artificial intelligence in teaching and learning from the study, it is clear that secondary school students make adequate use of artificial intelligence either from their phones or parents laptops and that it aids teaching and learning. Since they are teenagers, their usage of the device need to be regulated by their parents and school authority so that they will misuse the privilege given to them in this direction. Generally,

it can be seen that information and communication technology has impact how we live in this world and how we do things in this world in which the educational sector is one of them. Thus, the onus is on the parents and teachers to regulate the students' usage of this device. This is need to formalize how artificial intelligence can be incorporated into the school curriculum for easy teaching and learning. Therefore, their teachers need to be trained on how they can be using artificial intelligence to impact knowledge on the students.

References

- Alison Cawsey (1998). *The essence of artificial intelligence* Prentice Hall.
- Atlantic Re-think. (2018,). *Moral code: The ethics of AI*. Hewlett-Packard Enterprise. <https://youtu.be/GboOXAjGevA>
- Baker, T. & Smith, L. M (2019). *Education rebooted? Exploring the future of artificial intelligence in Schools and Colleges*. www.nesta.org.uk/documents/1190/Future_of_AI_and_education_v5_WEB.pdf
- Goswami, R. (2023). [*"Here's where the A.I. jobs are"*](#). CNBC.
- Harari, Yuval Noah (2018). [*"Why Technology Favors Tyranny"*](#). [*The Atlantic*](#).
- Leslie, D., Burr, C., Aitken, M., Cowls, J., Katell, M. & Briggs, M. (2021). Artificial intelligence, human rights, democracy, and the rule of law: a primer, Council of Europe, models. *International Journal of Artificial Intelligence in Education*, 14(2), 127–163.
- Liu, Y., Erath, A., Salwi, S., Sherry, A. & Mitchell M.B. (2020). *Alignment of Ethics Curricula in Medical Education: A Student Perspective*.
- Markoff, J., (2020). *A case for cooperation between machines and humans*. Nytimes.com.
- Pery, A., (2020). *Ethical Use of Data for Training Machine Learning Technology*. AIIM. Available at: <https://info.aiim.org/aiim-blog/ethical-use-of-data-for-training-machine-learning-technology-par>
- Reich, J. & Ito, M. (2017). *From good intentions to real outcomes: Equity by design in learning*. Irvine, CA: Digital Media and Learning Research Hub.
- Russell S. & Norvig, P. (2019). *Artificial Intelligence: A Modern Approach* (2nd Edition)
- Timms, M. J. (2016). Letting artificial intelligence out of the box: Educational Cobots and Smart Classrooms, *International Journal of Artificial Intelligence and Education* 26, (2), 701-712
- UNESCO (2022). *K-12 curricula: a mapping of governmental-endorsed AI curricula*. *Digital Media and Learning Research Hub*. <https://doi.org/10.54675/ELYF6010> United Nations Educational, Scientific and Cultural Organization (UNESCO) (2022). Recommendation on the ethics of artificial intelligence. 2021.<https://unesdoc.unesco.org/ark:/48223/pf0000381137>