ASSESSMENT OF LECTURERS' PERCEPTIONS OF USING ARTIFICIAL INTELLIGENCE FOR TESTING IN IGNATIUS AJURU UNIVERSITY OF EDUCATION, RIVERS STATE

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Abstract
The advent of artificial intelligence is affecting the way and manner things are been done in almost all the areas of human endeavour, the educational system not an exception and particularly in testing. The paper examined assessment of lecturers' perception of using artificial intelligence for testing in Ignatius Ajuru University of Education, Rivers State. The descriptive survey research design was adopted. Two research questions and one hypothesis guided the study. Population of the study comprised 400 academic staff (lecturers). Sample size was 300 selected using the stratified random sampling technique. Instrument for data collection was a questionnaire titled: "Lecturers' Perception of Artificial Intelligence for Testing Questionnaire" (LPAITQ). The reliability coefficient of the instrument was determined using test-retest and yielded a reliability coefficient of 0.72 (r = 0.72). The research questions were answered with mean and standard deviation, while the hypothesis was tested using the independent t-test. The result of the study revealed that lecturers' perception of using artificial intelligence for testing was positive, there was no significant difference in the lecturers' perception of using artificial intelligence based on gender. The study recommended that lecturers in the university system should update their knowledge through conferences, seminars and workshops on artificial intelligence use in testing.

Introduction

The use of test in assessing students' achievement has been an age-long practice that dates back to the beginning of times. Literature is replete with the use of test for selection into military service, placement, promotion, certification and other purposes as evidence of possession of certain skills or capacity for specific assignment and responsibilities. Hence, the importance of test in education and other areas of study cannot be overemphasized. The use of test in determining students' achievement in various subjects has passed through several phases in terms of techniques. The traditional paper and pencil technique is fast being replaced with new ones owing largely to advancement in information and communication technology (ICT).

Today, students are been tested using computers known as computer-based test (CBT). This method has helped in taking care of some of the weaknesses of the paper and pencil method. CBT has its own challenges especially availability of computers and inter-connectivity problems. It is expected that as times progresses, CBT will generally be used for assessing achievement, skill and competence not only in education but other areas of human endeavour. In recent times, the advent of artificial intelligence is affecting the way and manner things are been done globally. The educational system is not left out as it is been used in testing and other educational programmes.

Xuesong, et al. (2021) informed that the growth of big data, cloud computing, artificial neural networks, and machine learning has helped engineers to crease a machine that can simulate human intelligence. Hence, AI is defined as machines that have the capacity to perceive, recognize, learn, react and solve problems (Kumar & Thakur, 2012 in Xuesong, et al. (2021). AI has the ability to interact and help humans perform at higher levels, and it is an innovation that can change the status quo events as the years go by. AI is said to have strategic value for education and could be an effective learning tool that lessons the workload of teachers and teachers can offer effective learning experiences for students. Xuesong, et al. (2021) further explained that with the current education reforms such as gamification, and personalized learning experiences, there are many opportunities for development of AI applications in education. In education, for example, the modeling ability of AI techniques has been used to develop reactive and adaptive tutorials for the construction of individualized learning environments as compensation for the shortage of teachers through the use of intelligence tutoring system (ITS); and ITSs provide personalized learning experience in four ways: monitoring students' input, delivering appropriate tasks, providing effective feedback and applying interfaces for human-computer communication (Seldon & Abidoye, 2020).

Kothari (2020) explained that AI is a method of making a computer-controlled robost, or a software think intelligently like the human mind; and AI is accomplished by studying the patterns of the human brain and by analyzing the cognitive process. The outcome of these studies develops intelligence software and systems. The history of AI can be traced to the Dartmouth Summer Research Project Artificial Intelligence (DSRPAI) conference hosted by John McCarthy and Marvin Minsky in 1956. In this historic conference, McCarthy imagining a great collaborative effort, brought together top researchers from various fields for an open ended discussion on artificial intelligence, the term which he coined at the very event (Anyoha, 2017). Although this conference did not achieve its purpose, it catalyzed stimulated research endeavors in AI. In 1969, Shakey was the first general-purpose mobile robot built. In 1997, the supercomputer “Deep Blue” was built, and it was able to defeat the world champion chess player in a match. It was a great feat by IBM to have created this large computer. The first commercially successful robotic vacuum cleaner was created. From 2005 to 2019, speech recognition, robotic process

automation (RPA), a dancing robot, smart homes, and other innovation were launched. In 2020, Baidu released the Linear Fold AI algorithm to medical and scientific medical teams developing a vaccine during the early stages of the SAR-CoV-2 (COVID-19) pandemic. The algorithm can predict the RNA sequence of the virus in only 27 seconds, which is 120 times faster than other methods.

There are two broad categories of artificial intelligence (AI), weak AI and strong AI. The weak AI also known as narrow AI is AI systems that are designed to perform specific tasks (functions) and are limited to those tasks only. Weak AI systems excel at their designated functions but lack general intelligence. Examples include voice assistants like Siri or Alexa, recommendation algorithms, and image recognition systems. Also, weak AI performs or operates within predetermined boundaries and cannot generalize beyond their specialized domains.

On the other hand, strong AI also referred to as general AI, are AI systems that possesses human-level intelligence or even surpass human intelligence across a wide range of tasks; and would be capable of understanding, reasoning, learning, and applying knowledge to solve complex problems in a manner similar to human cognition (Kothari, 2020). There are different types of AI such as:

- Purely reactive: They are machines that do not have memory or data to work with, specializing in just one field of work.
- Limited memory: These are machines that collect previous data and continue adding it to their memory, they have enough memory or experience to make proper decisions, but memory is minimal. For example, limited memory AI machine can suggest a hotel based on the location data that have been gathered.
- Theory mind: This type of AI can understand thoughts and emotions, as well as interaction socially. This type of AI is yet to be built.
- Self-aware: These are future generation of new technologies expected to be intelligent, sentient, and conscious.

AI has merits and demerits. Merits of AI include: AI reduces human error, never sleeps and never gets bored, can easily handle repetitive tasks and it is very fast. AI has some demerits such as; it is costly to implement, it cannot duplicate human creativity; it will replace some jobs, leading to unemployment; and people can overly rely on it. Artificial Intelligence (AI) can be applied in several areas. Notable areas of application of AI are in: Natural Language Processing (NLP), image and video analysis, robotics and automation, recommendation systems, financial services, health-care, virtual assistants and chatbots, gaming, smart homes and efficiency of internet things (IoT) devices, cyber security, education, etc. Examples of AI applications include: Chat GPT, Google maps, smart assistants, snapchat filters, self-driving cars, wearables and muzero (Kothari, 2020). Javapoint.com (2023) explained that AI is a simulation of human intelligence into a computer machine so that it can think and acts like a human. It is a technology that helps a computer machine to think like a human. The aim of AI is to mimic human behaviour. As indicated earlier in the paper AI is applicable to several fields of study.

Specifically, in education the following are applications/roles of AI in education as identified by Javapoint.com (2023):

- Automate Basic Activities in education: To save the time of teachers in AI tools, it is possible to automate the grading system for nearly all types of multiple choice questions (MCQ) and fill-in-the-blank, and are very close to being used to grade written responses. By using AI, teachers would get more time to fill the gap in their classroom rather than investing their time in these tedious activities.
- Additional support for students with AI tutor: This tool provides additional support to students that help them in understanding study materials. There are currently various AI-driven tutoring programme that can help students in learning the basics of mathematics, writing and other subjects.
- Helpful feedback to students and teachers with AI-driven programme: AI can give feedback to both the teachers and students about the success level of the course. Most online providers are currently using such feedback-based AI systems to analyze the progress of the students and also alert the lecturers for the critical performance issue of the students. These types of AI-driven systems enables the student to get the proper support, and lecturers can determine the areas of teaching where it requires improvements.
- Finding improvement required in course with AI: With AI, instead of waiting for feedback from the teacher, students get immediate system generated response which enables them to understand a concept, and also how to do it correctly.
- AI change the role of the teacher: AI can be included in different aspects of teaching. AI systems can be programmed to provide expertise to students, a place where their doubts can be asked and could take the place of teacher for teaching basic course materials. In such cases, AI cloud could change the role of the teacher as a facilitator.
- Personalize education with AI: AI systems can be programmed to personalized learning to students. With personalized learning, each student can have their own way of learning according to their level of understanding and need. By understanding the need of every student, teachers can come up with a tailor-made study plan for every student.
- Generating smart content AI: AI can generate smart content in three ways

i) Digital lessons: Everything is digitalized including education. Digital learning is being preferred in colleges with customization options, e-books, study guides, bite-sized lessons, etc.

ii) Information visualization: Visualizing things rather than listening is much more efficient to understand in better way and keep in mind for a long time. With AI, the study information can be perceived in new ways of visualization, simulation web-based study environment.

iii) Learning content updates: AI helps in preparing the content of lessons, keeping information up to date, and makes it adaptable as per different learning curves.

- Ensure access to education for children with special needs: The adoption of innovative AI technology will provide new ways of interacting with students with special needs such as the deaf or hard of hearing, visually impaired, those with learning difficulties, etc.
- Universal access: AI provides universal access to study material. Each student has his/her own understanding capability, and with the use of the universal access, they can learn anywhere and anytime. Students can explore things whenever they want to learn without waiting for the tutor.

Javapoint.com (2023) has identified benefits of AI for students to include: twenty-four (24) hours access to learning; better engagement, less pressure, etc.

Several studies have been carried out on perceptions of using AI in teaching, testing and other areas in education. Kim and Kim (2022) investigated teachers' perceptions of using artificial intelligence-based tool for scientific writing. Specifically, the study investigated how teachers perceived an AI-enhanced scaffolding system developed to support students scientific writing for science, technology, engineering or mathematics (STEM) education. Results showed that most STEM teachers positively experienced AI as a source for superior scaffolding. However, they raised the possibility of several issues caused by using AI such as the change in the role played by teachers in the classroom and the transparency of decisions made by the AI system. Kim and Kim (2022) concluded that these results can be used as a foundation for which to create guidelines for the future integration of AI with STEM education in schools.

Wajid and Mahood (2023) carried out a study on assessment of awareness, perceptions and opinions towards artificial intelligence among healthcare students in Riyadh, Saudi Arabia. Convenience sampling technique was used for the study. A total of 157 pharmacy students participated for the study. The result showed that most of the students (73.9%) knew about AI, 69.4%) of the students thought that AI is a tool that helps health care professional. However, more than half of the students (57.3%)were aware that AI would help healthcare professionals in becoming better with the widespread use of AI. Also, 75% of the students agreed that AI reduces errors in medical practice. The majority of the students had positive perceptions about the concepts, benefits and implementation of AI.

Incerti (2020) investigated pre-service teachers' perception of artificial intelligence tutor for learning. The result of the study showed that pre-service teachers would like to know more about the Amazon O' Alexa AI platform. The study participants were pre-service teachers at a Midwestern University enrolled in a technology course. The study used a pair of two-way multivariate analysis of MANOVA which were conducted to determine if there was a statistically significant difference in means between the dependent variables of the pre-service teachers' stages of concern (stages 0-6), and the independent variables of gender, projected grade to teach, and teaching geographical area. Results from the SOC Questionnaire were as follows: Preservice teachers would like to receive more information

regarding the Amazon Alexa as a tool for teaching in informal and informal settings. The two-way MANOVA models do not reveal conducive results.

Luckin et al. (2016) examined educators' overall perception of AI and it was revealed that they had been greatly influenced by the concept of AI disseminated through the media and science of fiction, which caused them to consider AI to be an occupational threat that would replace their jobs rather than used to support the enhancement of learning and instruction Nevertheless, recent studies have contributed to raising teachers' expectations for significant changes in the educational field such as the implementation of AI in different educational settings.Consequently, a new concept has been introduced: Artificial Intelligence in Education (AIED), involving all aspects of educational uses of Ai (Roll & Whylie, 2016; Hrastinski et al., 2019; Peterson & Batchelor, 2019). The perception of teachers of AIED systems vary according to their pedagogical belief, teaching experience, prior experience using educational technology, and the effectiveness and necessity of a particular technology, all of which can influence their willingness to adopt new educational technology (Gilakjani et al., 2013; Ryu & Han, 2018). Most studies investigating teachers' perception of AIED showed that they commonly expected AI to be able to (a) provide more effective teaching and learning process through digitalized learning material and multimodal human-computer interactions (Jia et al., 2020); and (b) resolve various learning difficulties each student has catering to their needs in spite of large class size (Heffernan, 2014; Holmes et al., 2019).however, research has shown that there is hope for AIED to significantly reduce teachers' administrative workload by taking over simple and repetitive tasks.

Research Questions

The following research questions were raised and answered in the study

1. What is the lecturers' perception of using artificial intelligence for testing?
2. Is there difference the lecturers' perception of using artificial intelligence for testing based on gender?

Research Hypothesis

This hypothesis was formulated to guide the study:

Ho_1: There is no significant difference in the lecturers' perception of using artificial intelligence for testing based on gender.

Methodology

The descriptive survey design was used for the study. Nwankwo (2006) explained that descriptive survey study is that which the researcher collects data from a large sample drawn from a given population and describes certain features of the sample as they are at time of the study. The descriptive survey research design was adopted. Two research questions and one hypothesis guided the study. Population of the study comprised 400 academic staff (lecturers). Sample size was 300 selected using the stratified random sampling technique. Instrument for data

collection was a structured questionnaire on a 4-point likert rating scale titled: "Lecturers' Perception of Artificial Intelligence for Testing Questionnaire" (LPAITQ). Face and content validity of the instrument was validated by two experts.The reliability coefficient of the instrument was determined using test-retest and yielded a reliability coefficient of 0.72 (r = 0.72). The research questions were answered with mean and standard deviation, while the hypothesis was tested using the independent t-test at 0.05 level of significance.

Results

Research Question One: What is the lecturers' perception of using artificial intelligence for testing?

Table 1: Mean and Standard Deviation of Lecturers' Perception of using AI

S/N	Item/Statement	N	$\bar{X}$	SD	Decision
1	I have a little knowledge of artificial intelligence	300	2.66	0.86	Accept
2	I would like to explore the possibility of using artificial intelligence in testing students	300	2.54	1.02	Accept
3	I am preoccupied with things other than using artificial intelligence for testing	300	2.78	0.97	Accept
4	Artificial intelligence can reduce errors in testing	300	3.01	0.74	Accept
5	Artificial intelligence can facilitate test administration	300	2.92	1.12	Accept
6	Artificial intelligence can negatively affect test results	300	3.20	0.88	Accept
7	Artificial intelligence will violet ethics in testing	300	2.85	0.93	Accept
8	Artificial intelligence is useful in testing	300	2.60	1.05	Accept
9	Artificial intelligence can assist in scoring test items	300	3.12	0.76	Accept
10	Artificial intelligence can assist in formative testing of students	300	2.95	0.65	Accept
11	Artificial intelligence can assist in test construction	300	2.40	1.08	Accept
12	Artificial intelligence can improve the credibility of test results	300	3.61	0.83	Accept
13	Artificial intelligence can eliminate subjectivity in test scoring	300	2.81	0.79	Accept
14	Artificial intelligence cannot be solve all the problems associated with testing	300	2.57	1.06	Accept
15	Artificial intelligence can lead to test anxiety	300	3.21	0.67	Accept
	Grand Mean		**2.88**	**0.89**	

Table 1 shows that the grand mean (2.88) of lecturers' perception of using artificial intelligence for testing is above the criterion mean of 2.5. This result implies that the respondents are in agreement with the identified items in the table. The conclusion is that the lecturers' perception of using artificial intelligence for testing is acceptable.

Research QuestionTwo: Is there difference the lecturers' perception of using artificial intelligence for testing based on gender?

Table 2: Mean and Standard Deviation of Lecturers' Perception of using AI for testing based on gender

S/N	Item/Statement	Gender						
		Male			Female			
		N	$\bar{X}$	SD	N	$\bar{X}$	SD	Decision
1	I have a little knowledge of artificial intelligence	198	2.81	0.81	102	2.66	0.73	Accept
2	I would like to explore the possibility of using artificial intelligence in testing students	198	2.65	1.20	102	2.72	0.87	Accept
3	I am preoccupied with things other than using artificial intelligence for testing	198	2.85	0.86	102	2.58	1.07	Accept
4	Artificial intelligence can reduce errors in testing	198	2.70	0.94	102	3.30	0.94	Accept
5	Artificial intelligence can facilitate test administration	198	3.15	1.01	102	3.63	0.74	Accept
6	Artificial intelligence can negatively affect test results	198	2.83	0.78	102	3.91	1.21	Accept
7	Artificial intelligence will violet ethics in testing	198	2.94	0.92	102	2.66	0.94	Accept
8	Artificial intelligence is useful in testing	198	2.80	0.5	102	2.78	1.69	Accept
9	Artificial intelligence can assist in scoring test items	198	2.94	0.66	102	2.61	0.59	Accept
10	Artificial intelligence can assist in formative testing of students	198	2.86	1.05	102	3.02	1.02	Accept
11	Artificial intelligence can assist in test construction	198	2.56	0.81	102	2.93	0.75	Accept
12	Artificial intelligence can improve the credibility of test results	198	2.92	0.69	102	2.67	0.84	Accept
13	Artificial intelligence can eliminate subjectivity in test scoring	198	3.12	0.66	102	2.61	0.93	Accept
14	Artificial intelligence cannot be solve all the problems associated with testing	198	2.79	0.78	102	2.54	0.68	Accept
15	Artificial intelligence can lead to test anxiety	198	2.73	0.91	102	2.64	0.92	Accept
	Grand Mean		**2.84**	**0.83**		**2.75**	**0.86**	

Table 2 shows that the grand mean (2.83) of male lecturers on their perception of using artificial intelligence for testing is above the criterion mean (C.M) (2.5). This means that the male lecturers' perception of using artificial intelligence for testing is acceptable. Also, a closer look at table 2 reveals that the grand mean (2.75) of female lecturers on their perception of using artificial intelligence for testing is above the criterion mean (2.5).This implies that female lecturers perception of using artificial intelligence is acceptable.

Research Hypothesis

Ho_1: There is no significant difference in the lecturers' perception of using artificial intelligence for testing based on gender.

Table 3: T-test analysis of Lecturers' Perception of using Artificial Intelligence for Testing based on Gender

Gender	N	$\bar{X}$	SD	t-cal	p-value	Sig. level ($\propto$)	Decision
Male	198	2.84	0.83				
Female	102	2.75	0.86	0.88	0.19	0.05	Not Rejected

Table 3 shows that the p-value (0.19) is greater than the level of significance ($\propto$ = 0.05). Therefore, the null hypothesis (Ho) is not rejected. This result means that there is no significant difference in the lecturers' perception of artificial intelligence for testing.

Discussion of findings

The findings of the study revealed that the lecturers' perception of using artificial intelligence for testing in Ignatius Ajuru University of Education reveals a nuanced landscape shaped by various factors such as attitudes towards technology,educational philosophy and concerns about fairness and ethics,opportunities for collaboration and professional development and need for further research and dialogue. This finding is in agreement with Kim and Kim (2022) who reported that most STEM teachers positively experienced artificial intelligence as a source for superior scaffolding.

The study revealed that lecturers' perception of using artificial intelligence for testing based on gender. This means that both male and female lecturers have positive perception on the use of artificial intelligence for testing, it also shows that the slight difference observed in the perception of male and female lecturers is not statistically significant. Incerti (2020), Wajid and Mahood (2023) all reported positive perception on the use of artificial intelligence in teaching and learning processes.

Conclusion

The result of the study has shown that assessment serves as a foundational step in the journey towards implementing AI -powered testing methods that align with the values,needs and aspirations of lecturers and broader educational community. Therefore lecturers experiences,familiarity with AI,and comfort levels with technology influence their perceptions. Finally,concerns about fairness, reliability ,privacy and the potential displace traditional teaching methods.

Recommendations

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

1. Lecturers in the university system should host conferences, seminars and workshops dedicated to discuss artificial intelligence usage in assessment,

evaluating and testing.

2. University should provide lecturers with hands-on experience or demonstration of AI-powered testing tools and gather feedback in real time.
3. Organize focus group discussions with lecturers to facilitate open dialogue and idea exchange. Encourage participants to share their thoughts on AI testing, brainstorm potential implementation strategies.

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