



VIRTUAL REALITY (VR) FOR INSTRUCTIONAL PURPOSE; AWARENESS AND INTEREST OF COLLEGES OF EDUCATION LECTURERS IN YOBE STATE, NIGERIA

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Abstract

The integration of Virtual Reality (VR) into education offers opportunities to improve teaching effectiveness and enhance students' learning experiences. However, its successful adoption in higher education largely depends on lecturers' awareness and interest in its instructional application. This study examined lecturers' awareness and interest in the use of Virtual Reality for instructional purposes in Colleges of Education in Yobe State, Nigeria. A descriptive survey research design was adopted. The study population consisted of 369 lecturers, from which a sample of 186 lecturers was selected using simple random sampling technique and the Krejcie and Morgan sample size determination table. Data were collected using the Virtual Reality Awareness and Interest Questionnaire (VRAIQ), which was validated by experts and yielded a reliability coefficient of 0.89 using Cronbach's alpha. Data were analyzed using percentages and independent samples t-test at a 0.05 level of significance. The findings revealed a moderate level of lecturers' awareness of VR (56.2%) and a positive level of interest in integrating VR into teaching and learning (63.0%). The t-test showed no significant difference between male and female lecturers' awareness of VR, $t(184) = 0.58$, $p = .72$. The study concluded that lecturers are receptive to adopting VR for instructional purposes and recommended the provision of VR facilities and regular professional development programmes to enhance effective classroom integration.

Keywords: virtual reality, instructional technology, lecturers' awareness, lecturers' interest, Colleges of Education, Nigeria

Introduction

As the world continues to transition from an analogue era to a more advanced digital environment through the integration of technology into everyday activities, there is a growing need to simplify and improve the way tasks are performed. Similarly, the education sector must adapt to these technological changes in order to produce up-to-date learners who can meet the challenges of an increasingly innovative and competitive global society. The quality of any education system is strongly influenced by the competence, preparedness and adaptability of its teachers. Therefore, lecturers must also transit from traditional teaching approach to more innovative, technology-driven, and digitally oriented methods that equip learners with the skills required to effectively respond to emerging global challenges.



Virtual Reality (VR) is an emerging technological innovation in education that provides teachers with opportunities to enhance student engagement and improve learning outcomes. Although, technology cannot completely replace human interaction in the teaching and learning process, it can significantly enhance instructional effectiveness and students' academic performance. VR provides learners with immersive and multidimensional learning experiences, enabling them to gain firsthand knowledge of concepts that may otherwise be difficult to observe directly. It allows learners to experience events and environments through multiple sensory channels while remaining within the classroom setting. According to Marougkas et al., (2023), traditional methods of reading and learning theory may not appeal to all students; however, virtual reality offers a comprehensive and engaging learning environment where students can learn effectively through observation, interaction, and experience.

According to Hamad and Jia (2022), virtual reality is an interactive and immersive experience that creates a sense of presence within a simulated environment. Similarly, Irigoyen et al., (2024) defined VR as a computer-generated environment consisting of images, sounds, and other sensory stimuli that create an artificial setting incorporating auditory, visual, haptic, and other forms of feedback. This technological innovation can be utilized in education to create simulated environments that closely resemble real-world situations, allowing learners to experience phenomena that may be impossible or difficult to encounter in reality. Austermann et al., (2025) affirmed that the primary objective of VR is to immerse users in an artificial environment that creates the illusion of being in a realistic setting with sufficient interactivity to perform tasks effectively and comfortably. VR provides learners with opportunities to acquire knowledge and skills within virtual environments while in their classrooms. The experiences gained through VR are often easier to remember because they engage multiple senses, including sight, hearing, and touch.

An innovative teacher consistently exposes learners to technologies that encourage critical thinking and the development of multidimensional problem-solving skills. Sorayyaei *et al.*, (2025) argued that, educators in the digital age must embrace and leverage innovative teaching methods to deliver effective and meaningful learning experiences. VR has been described as a cutting-edge technology that enables learners to move beyond the traditional computer screen into an interactive three-dimensional environment (Brachet et al., 2025). Nissim et al., (2024), VR offers alternative ways of experiencing information and serves as a valuable tool for model building and the enhancement of problem-solving skills. Shambare & Simuja (2024) found that, a perceived usefulness and ease of use positively influenced the adoption of virtual laboratories. As VR technology continues to gain widespread acceptance, educators have increasingly embraced its potential for learning. The technology provides several educational benefits, including increased student engagement, authentic and constructivist learning experiences, enhanced empathy and perspective-taking, improved creativity, and the ability to visualize complex concepts (Sorayyaei et al., 2025).

Interest is an important factor in the learning process. Hu, and Yang (2023) interest significantly influences what individuals pay attention to and remember. They further noted that interest facilitates learning, improves understanding, stimulates effort, and encourages personal involvement. In another perspective, interest is viewed as a sustained predisposition to engage with particular content or activities over time, characterized by positive feelings, accumulated knowledge, and perceived value. Individuals with well-developed interests in specific content areas tend to engage with such content voluntarily and are less dependent on external environmental factors to sustain their motivation (Vergara-Arteaga et al. 2026). Salihi (2021) reported a significant difference in the mean interest scores of students exposed to virtual reality-based instruction and those taught using conventional teaching methods. The findings suggest that virtual reality-based instructional strategies can enhance students' interest in learning. Similarly, Huang and Richter (2022) observed that VR stimulates learners' interest in classroom activities and promotes active engagement during the teaching and learning process.

Despite the growing recognition of Virtual Reality (VR) as an innovative instructional technology, its adoption in educational institutions in developing countries remains relatively low. Several studies have examined the effectiveness of VR in enhancing students' academic achievement, motivation, and



engagement. However, limited attention has been given to lecturers' awareness and interest in using VR for instructional purposes, particularly in Colleges of Education in Nigeria. Most existing studies focused on students or pre-service teachers, with little empirical evidence available regarding lecturers in tertiary institutions. Since lecturers play a critical role in the successful integration of educational technologies, understanding their level of awareness and interest is essential for effective implementation. Therefore, this study seeks to investigate lecturers' awareness of and interest in the use of Virtual Reality for instructional purposes at the Federal Colleges of Education, Yobe State, Nigeria.

Objectives

1. To determine the level of lecturers' awareness of virtual reality for instructional purposes.
2. To determine the level of lecturers' interest in the use of virtual reality for instructional purposes.
3. To determine whether there is a gender differences in lecturers' awareness of virtual reality for instructional purposes.

Research Questions

1. What is the level of lecturers' awareness of virtual reality for instructional purposes?
2. What is the level of lecturers' interest in the use of virtual reality for instructional purposes?
3. Is there a difference between male and female lecturers' awareness of virtual reality for instructional purposes?

Hypothesis

1. There is no significant difference between male and female lecturers in their awareness of virtual reality for instructional purposes.

Methodology

A descriptive survey research design was adopted for the study. The target population comprised all lecturers of the Federal College of Education (Technical), Potiskum, Yobe State, with a total population of 369 lecturers. A sample of 186 lecturers was selected using a simple random sampling technique, guided by the Krejcie and Morgan table for determining sample size. Data were collected using a structured questionnaire titled Virtual Reality Awareness and Interest Questionnaire (VRAIQ). The instrument was developed by the researchers and subjected to face and content validation by experts in measurement and evaluation, English language, and educational technology. The reliability of the instrument was determined using Cronbach's alpha, which yielded a reliability coefficient of 0.89, indicating high internal consistency.

The questionnaire was administered electronically through Google Forms, and 186 responses were retrieved and used for analysis. Before participation, respondents were informed about the purpose of the study, and their consent was obtained. Participation was voluntary, and respondents were assured of anonymity and confidentiality. No personally identifiable information was collected, and the data obtained were used strictly for academic purposes and securely stored. Ethical approval and permission to conduct the study were obtained from the appropriate academic authority of the Federal College of Education (Technical), Potiskum. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0. Percentages were used to describe respondents' demographic characteristics and answer the first two research questions, while mean, standard deviation, and independent samples t-test were used to answer the third research question and test the hypothesis at a 0.05 level of significance.

Result and Discussion

This section presents the result obtained from the collected data based on the questions presented to the lectures as well as discussing the result in detail.



Table 1: Demographic data of the respondents based on gender

Gender	Frequency	Percentage (%)
Male	120	64.5%
Female	66	35.5%
Total	186	100%

Table 1 shows that, 120 (64.5%) of the respondents were male lecturers, while 66 (35.5%) were female lectures. This implies that, the majority of the respondents were male.

Research Question 1: What is the level of lecturers' awareness of virtual reality for instructional purposes?

Table 2: level of lecturers' awareness of virtual reality for instructional purposes

S/N	QUESTIONS	Response			
		Strongly Agreed	Agreed	Strongly Disagreed	Disagreed
1	I am aware of virtual reality (VR) technology.	64 (34.4%)	79 (42.5%)	10 (5.4%)	33 (17.7%)
2	I am of the cognizant of the relevancy of VR for educational activities	12 (6.5%)	15 (8.1%)	81 (43.5%)	78 (41.9%)
3	I come across the concept of VR technology during my personal reading.	100 (53.8%)	74 (39.8%)	03 (1.6%)	09 (4.9%)
4	I am aware of the use of VR technology for instruction and it helps to reduce teacher barding and simplify learners understanding.	09 (4.8%)	20 (10.8%)	84 (45.2%)	73 (39.2%)
5	I have heard about VR technology application in to education but don't have any knowledge about it.	52 (27.9%)	91 (48.9%)	27 (14.6%)	16 (8.6%)
6	VR does not have any impact on learning, it is just for entertainment.	36 (19.4%)	104 (55.9%)	29 (15.6%)	17 (9.1%)
7	I have firsthand knowledge about VR and its application in to classroom activities.	22 (11.8%)	20 (10.8%)	98 (52.7%)	46 (24.7%)
8	VR technology does not encourage learning and retention.	77 (41.4%)	64 (34.4%)	33 (17.7%)	12 (6.5%)
9	VR takes learners to different learning environment that is not relevant to the present or current learning content.	62 (33.3%)	40 (21.5%)	56 (30.1%)	28 (15.1%)

Table 2 shows the number and percentage of each question respond by the respondents. In item one, 64 teachers which represent (34.4%) strongly agreed and 76 which represent (42.5%) agreed that they are



aware of virtual reality technology while 10 out of 186 (5.4%) and 33 of 186 (17.7%) of teachers strongly disagreed and disagreed that they aware of VR technology.

In item two, the number of teachers responses for each scale shown in the table above. 12 (6.5%) and 15 (8.1%) out of 186 strongly agreed and agreed that, they are of the cognizant of the relevancy of VR for educational activities. Furthermore, 81 (43.5%) and 78 (41.9%) out of the 186 teachers strongly disagreed and disagreed of the opinion of the cognizant of the relevancy of VR for educational activities.

Furthermore, item three, 100 teachers out of 187 (53.8%) strongly agreed and 74 out of 186 (39.8%) agreed that, they come across the concept of VR technology during their personal research. However, only 3 (1.6%) and 9 (4.9%) out of 186 teachers strongly disagreed and disagreed with the statement.

The number of teachers responses to item four shows that, only 9 (4.8%) and 20 (10.8%) out of 186 teachers agreed that, they are aware of the use of VR technology for instruction and it helps to reduce teaching barding and simplify learners understanding. In parallel to the stated statement, 84 (45.2%) out of 186 teachers and 73 (39.2%) out of 186 teachers strongly disagreed and disagreed with the opinion.

Moreover, the number of teachers' responses for item five identifies that, 52 (27.9%) and 91 (48.9%) respectively strongly agreed and agreed with the view that, they have heard about VR application in to education but they don't have any knowledge about It. In contrary to their view, 27 (14.6%) out of 186 strongly disagreed and 16 (8.6%) of the total population 186 agreed with the opposite idea.

The responds of question six from the table shows that, 36 and 104 which represent (19.4%) and (55.4%) out of 186 teachers respectively strongly agreed and agreed that, VR does not have any impact on learning, it is purposely for entertainment while 29 (15.6%) out of 186 and 17 (9.1%) out of the same population of teachers strongly disagreed and disagreed that, VR does not have any impact on learning, it is purposely for entertainment.

From the table question seven was responded as, 22 teachers out of 186 (11.8%) and 20 out of 186 (10.8%) strongly agreed and agreed that, they have firsthand knowledge or information about VR and its application in the classroom. While 98 (52.7%) and 46 (24.7%) out of 186 teachers says that, they don't have firsthand knowledge about VR and its applications in the classroom environment.

The responses of item eight indicated that, 77 (41.4%) out of 186 teachers strongly agreed, 64 (34.4%) out of the total population of 186 teachers agreed, 33 (17.7%) teachers out of 186 strongly disagreed and only 12 representing (6.5%) out of 186 disagreed that, VR technology does not encourage student learning and knowledge retention.

Lastly, in the view of item nine which says that, VR takes learners to different learning environment that is not relevant to the current or present learning environment. 62 out of 186 (33.3%) teachers strongly agreed, 40 teachers representing (21.5%) agreed, 56 (30.1%) out of 186 strongly disagreed and finally, 28 out of 1'86 teachers disagreed by the saying.

The overall awareness percentage of (56.2%) was obtained by averaging the percentages of responses who selected "Strongly Agree" and "Agree" across the awareness items. After appropriate reverse scoring of negatively worded statements, the result indicates that, lecturers possess a moderate level of awareness of virtual reality technology for instructional purposes.



Research Question 2: **What is the level of lecturers' interest in the use of virtual reality for instructional Purposes?**

Table 3: level of lecturers' interest in the use of virtual reality for instructional Purposes

S/N	QUESTIONS	Response			
		Strongly Agreed	Agreed	Strongly Disagreed	Disagreed
1	I am interested in using virtual reality for instructional purpose	94 (50.5%)	63 (33.9%)	20 (10.8%)	09 (4.8%)
2	I am motivated by using virtual reality in my class	68 (36.5%)	76 (40.9%)	23 (12.4%)	19 (10.9%)
3	Virtual reality encourages my students to come to class and encourage active participation during questioning session.	24 (12.9%)	33 (17.8%)	57 (30.6%)	72 (38.7%)
4	As a teacher, I want students to use virtual reality technology in my class.	82 (44.1%)	61 (32.8%)	20 (10.7%)	23 (12.4%)
5	I always encourage my students to learn by using virtual reality technology.	12 (6.4%)	19 (10.2%)	84 (45.2%)	71 (38.2%)
6	I want virtual reality application to be one of the topics to be taught in schools.	73 (39.3%)	60 (32.4%)	39 (20.9%)	14 (7.5%)
7	As a teacher, I want parents to help in using virtual reality technology.	81 (43.6%)	74 (39.8%)	20 (10.7%)	11 (5.9%)

In table 3, teachers' interest in using virtual reality for instructional purpose was highlighted and the responses are 94 responses which represented (50.5%) of teachers strongly agreed, 63 (33.9%) agreed with the statement, while 20 (10.8%) and 9 (4.8%) responses strongly disagreed and agreed. Item two says that, I am motivated by using VR in my class. 68 teachers out of 186 which represent (36.5%) strongly agreed, 76 (40.9%) of the 186 agreed. However, 23 (12.4%) and 19 (10.9%) strongly disagreed and disagreed respectively.

Moreover, item three mentioned that virtual reality encourages learners to come to the class and increases active participation in the class. 24 responses representing (12.9%) and 33 (17.8%) strongly agreed and agreed while 57 (30.6%) and 72 (38.7%) strongly disagreed and disagreed with the statement.

The responses of item four indicated 82 out of 186 representing (44.1%) of teachers strongly agreed, 61 out of 186 teachers agreed with the statement. Only 20 out 186 teachers strongly disagreed and 23 of 186 disagreed with the statement in item four. So also, item five, only 12 (6.4%) and 19 which represent (10.2%) out of 186 responses agreed that, I always encourage my students to learn using VR technology while 84 (45.2%) and 71 (38.2%) out of 186 teachers strongly disagreed and disagreed with the statement.

From the table, item six revealed that, 73 of 186 (39.3%) teachers strongly agreed, 60 out of 186 (32.4%) teachers agreed with the statement, however, 39 out of 186 (20.9%) teachers strongly disagreed while 14 (7.5%) of teachers disagreed with the item. Lastly, item seven shows that, 81 teachers out of the 186

represented (43.6%) strongly agreed that, parents should help their children to utilize virtual reality technology. 74 (39.8%) of teachers agreed while 20 (10.7%) and 11 (5.9%) out of 186 teachers strongly agreed and disagreed with the statement.

The overall interest percentage of (63.0%) was obtained by averaging the percentages of responses selected "Strongly agree" and "Agree" across the interest items. The result indicates that lecturers generally demonstrated a positive interest in the use of virtual reality for instructional purposes. This finding was in line with that of Dhillon and Singh (2023) revealed that, majority of the higher secondary school teachers, were found to have an average level of ICT interest.

Research Question 3: **Is there a significant difference between male and female lecturers' awareness of virtual reality for instructional purposes?**

Table 4: Mean and Standard Deviation of Male and Female Lecturers Awareness of Virtual Reality for Instructional Purposes

Gender	N	Mean (M)	SD
Male	120	1.56	0.77
Female	66	1.48	0.71
Total	186		

Table 4 present mean and standard deviation scores of male and female lecturers' awareness of virtual reality for instructional purposes. The result indicate that male lecturers recorded a slightly higher awareness mean score ($M = 1.56$, $SD = 0.77$) compared with female lecturers ($M = 1.48$, $SD = 0.71$). This suggested that male lecturers have higher awareness of virtual reality than female lecturers.

Hypothesis Testing

Hypothesis 1: **There is no significance difference between male and female lecturers in the Awareness of virtual reality for instructional purposes**

Table 5: Independent Sample t-Test of Male and Female Lecturers Awareness of Virtual Reality for Instructional Purposes

S/n	Gender	N	M	SD	DF	T	Sig (2-tailed)	Remark
	Male	120	1.56	0.77				
					184	0.58	0.72	Accepted
	Female	66	1.48	0.71				

An independent-samples t-test was conducted to determine whether there was a significant difference between male and female lecturers' awareness of virtual reality for instructional purposes. The result showed that there was no statistically significant difference between male lecturers ($M = 1.56$, $SD = 0.77$) and female lecturers ($M = 1.48$, $SD = 0.71$), $df = (184)$, $t = 0.58$, $p = 0.72$. Since the p-value (0.72) is greater than the alpha level of .05, the null hypothesis was retained. This implies that, gender did not significantly influence lecturers' awareness of virtual reality for instructional purposes. The effect size was negligible (Cohen's $d \approx 0.11$), indicating that the practical difference between male and female lecturers' awareness levels was very small. The finding is in-line with that Soetan et al., (2020) which says that, there was no significant difference between male and female teachers' awareness of virtual reality for instructional



purpose. Adeoye, M. (2023) express the widespread gap in the attitude and (perceived) competency in information literacy between male and female teachers. However, Scherer et al., (2023) found a little difference between genders which occurs as a result of females' teachers' frequent use of a virtual learning environment.

Conclusion

This study examined lecturers' awareness and interest in the use of Virtual Reality (VR) for instructional purposes in Colleges of Education in Yobe State, Nigeria. The findings revealed that lecturers possessed a moderate level of awareness of VR technology, with an overall awareness level of 56.2%. The study also found that lecturers demonstrated a positive interest in integrating VR into teaching and learning, with an overall interest level of 63.0%. Furthermore, the findings showed that there was no significant difference between male and female lecturers' awareness of VR for instructional purposes, indicating that gender did not influence lecturers' awareness of VR technology. Based on these findings, it can be concluded that lecturers are generally receptive to the adoption of VR as an instructional tool. However, the moderate level of awareness suggests the need for increased exposure, training, and professional development to improve lecturers' knowledge and practical competence in using VR effectively. Providing adequate VR facilities, supportive institutional policies, and continuous capacity-building programmes will be essential for promoting the successful integration of VR into classroom instruction in Colleges of Education.

Recommendation

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

1. Colleges of Education should provide adequate Virtual Reality (VR) facilities, including VR devices, relevant software, and supporting infrastructure, to enable lecturers to effectively integrate VR into teaching and learning activities.
2. Institutional administrators should organize regular training programmes, workshops, and professional development activities for lecturers to improve their awareness, competence, and confidence in the use of VR for instructional purposes, considering the moderate level of awareness identified in the study.
3. Colleges of Education should develop supportive policies and provide technical assistance that encourage lecturers to adopt VR-based instructional approaches, while promoting continuous improvement in the use of emerging educational technologies.

Limitations of the Study

This study was limited to lecturers of the Federal College of Education (Technical), Potiskum, Yobe State. Therefore, the findings may not be generalized to all tertiary institutions in Nigeria. The study relied on self-reported responses which may be subject to response bias. Furthermore, the cross-sectional nature of the study only captured lecturers' opinions at a particular point in time. Changes in awareness and interest levels over time were not investigated. Finally, the study was conducted using data collected in a single institution, which may limit the generalization of the findings.

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