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INFUSION OF AUGMENTED REALITY TECHNOLOGY: STUDENTS' PERCEPTION ON ITS APPLICATION FOR MOTIVATION AND LEARNING ON UNDERGRADUATES IN IKERE-EKITI, NIGERIA.

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Abstract

Augmented Learning requires a reconstruction of the roles, responsibilities, and practices of instructors and their students, which has become a reality that transcends the educational environment. The objective of this study is to investigate the strength of the relationship between Augmented-learning and students' motivation and learning process among students participating in the research. This study investigated the perception of Science Education students on Augmented Reality Technology technique and how it enhances effective teaching and learning process in the department of Science Education Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti, Nigeria using level 1-3 in the department. The study comprises students from level 1-3 in the department of science education. A random sampling technique was used to select 70 students from each level of study, making a total of 210 students. Four research questions were raised to guide the study and the data collected was analyzed using descriptive statistics. The study revealed the learning technique has motivated students learning. The study further revealed that Augmented Reality Technology technique facilitates effective teaching and learning process in the institution and the level of exposure of students to the learning technique is minimal due to inadequate learning tools. Based on the findings, it was recommended that adequate online facilities and device should be provided for students. It was also recommended that the Augmented Reality Technology technique learning should be infused and promoted in higher institutions and students should be orientated and retrained on the use of the learning technique. Lecturers should also be encouraged to regularly utilize online platforms for teaching, rating and assessment among others for effective motivation and learning.

Keywords: Augmented Reality, Infusion, Motivation, Perception, Science Education

Introduction

The Innovative improvement of a non-industrial nation like Nigeria generally relies upon the successful instructing and learning of science subjects. Thusly, Nigeria's instructive strategies and projects are being coordinated toward the information on logical ideas. It is difficult to exaggerate how significant science and innovation are to a country's turn of events. This is because of the way that the progression of any general public relies incredibly upon its residents' information and specialized abilities. The course of our society in the future will be determined by citizens who are capable of comprehending and shaping the complex effects of science and technology on our world (Ungar, 2014). Accordingly, Nigeria's instructive arrangements and projects are centered around technical disciplines and fundamental science as the center and groundwork of science, which fills in as the turn around which other Science subjects spin.

For the comprehension of the many difficulties confronting contemporary society, including new advancements and maintainable turn of events, it is fundamental to understand the substance and cycles concentrated by science (Zdem, 2016). Logical information and ideas are the wellspring of each and every produced thing you find in your home or business environment. For example, science and innovation are results of cell phones, radio and TVs, PC tablets, iPads, iPhones, iPods, PCs, and work areas among other devices.(Tunde and Anthony, 2014).

Both social and virtual learning environments, as well as tools, are known to have emerged as tools that enhance the learning process, and information and communication technologies have become an everyday part of our learning experience Yimer, & Gizachew, (2022). The courses alongside application projects and abilities make correspondence powerful and effective as conceivable during the time spent training in light of learning new advances and techniques to be executed and the outcome is that it is pertinently seen in examinations (Al-Wattar, 2021). Augmented reality and virtual lessons are two of the technologies used in the courses that students take, and technologies that are referred to as extended or augmented reality expressions have been utilized in this setting. Toledo-Morales, , & Sanchez (2018), expanded the truth as an intelligent encounter that joins this present reality and PC created content. The content can appeal to a wide range of senses, including the olfactory, somatosensory, auditory, and tactile.

AR is a virtuality-based innovation that empowers us to connect with this present reality progressively. As indicated by Cabero and Barroso (2016), AR is an innovation that permits the client to see this present reality by consolidating genuine components with virtual connections and computer generated simulation application in which clients cooperate with virtual items while collaborating with this present reality without influencing this present reality. It is the formation of an intelligent climate between the virtual world and this present reality that can oblige the qualities of the two conditions. AR innovation is utilized to establish this intuitive climate (Bronack, 2011). At the end of the day, AR enhances the current reality with virtual items it adds to the genuine climate and makes it more powerful (Cheng and Tsai, 2013).

AR learning is used nowadays as another option to face to face education. As a matter of fact, its use increases in a direct proportion with the increase of the number of students. This has made educators exert a lot of effort to help the learners to get interactive content that is full of multimedia as it has been proven that it has a significant effect on the process of learning. The impact of blogs and wikis has also been investigated on learners' collaboration and reflection and it was reported that they both have a positive effect. AR-learning has been introduced as a tool in the learning process in the majority of the international universities worldwide. The ubiquity of information technology has been influencing almost all aspects of our lives: the way we work, interact with others, process data into information, analyze and share information, entertain ourselves, and enjoy tourism. E-evolution or e-revolution has witnessed e-mails, e-commerce, e-government, and now e-education. E-education or online education is changing the way we approach teaching and learning. Changes in education delivery models have been rapid and transformational. As institutions worldwide adapt to these changes, a very dynamic education landscape has generated immense interest among researchers, educators, administrators, policymakers and publishers (Palvia, 2013).

Various applications of augmented reality include the following: In this study, educators can use augmented reality to help engage students in the classroom with dynamic 3D models, structures, and overlays of fun facts. Other applications include photograph filters, automotive controls, gaming, navigation systems, healthcare, real estate, and education. Visual learners could greatly benefit from the use of an augmented reality visualization tool. Understudies could likewise recall the substance of examples all the more effectively where schools utilize expanded reality innovation in educating, making learning a seriously captivating encounter. Furthermore, instructive organizations can now empower expanded reality in remote picking up, assisting understudies with getting live tutoring and learning support.

Likewise, it is believed that ongoing educational plans are inadequate to answer the contrasting assumptions for the present youth, which is known as the advanced age or age z. 21st century understudies, called computerized locals, vary from past ages because of their particular highlights, for example, their craving to get to data rapidly, games rather than serious examinations, visual and realistic components rather than long texts, having an equal mental construction, and having the option to accomplish more than one occupation at the same time (Bilgi, 2011). These natural highlights of computerized locals have likewise prompted developments in the realm of training and another learning society has arisen. In this sense, while showing processes are being organized, new mechanical methodologies have begun to be liked. Consequently, it has become basic to know the qualities of the new age and to arrange the schooling showing process with showing strategies reasonable for their attributes, reshape educational plans and conditions to permit the utilization of inventive innovations (İzgi, 2018).

At the end of the day, viable learning happens as long as the student has some good times in the educational experience and effectively takes part in the educational experience, and the connection component that plays a significant part as of now can be given by expanded reality applications(Çetin, & Türkan, . 2022).. Uses of increased reality converging into the instructive cycle give understudies, teachers and profes-sionals genuine like intuitive encounters among media and content; students can openly investigate their growth opportunities by sorting out components of genuine by suggesting viewpoints that are given to empower one to advance by doing and encountering (Uzunboylu, & Yıldız, 2016). .

It is seen that instructive conditions planned with expanded reality innovation empower growth opportunities to be competent at the purposes of improving the quality of showing processes in training,

enhancing the substance of schooling and supporting and expanding the view of students (Christopoulos, , & Macredie, 2022).. Expanded the truth is arising as an innovation that can be utilized to furnish students with a significant growth opportunity by introducing their language abilities and fields in an intuitive manner in a genuine setting. Schooling is effective, productive and appealing and different showing techniques are utilized to utilize PC innovation, a prerequisite of these strategies, which is upheld with our age and training are interlaced persistently. The powerful utilization of this innovation is that understudies will increment in their classes the interest, inspiration and achievement. In this article, it will keep on being planned by designing for this reason.(Jdaitawi,., & Kan'an, 2022).

Related Studies

Eldokhny and Drwish (2021) meant to research the viability of expanded reality in web-based distance learning in their review and, accordingly, stressed that it is more compelling in supporting increased reality in distance schooling. In general, they have come to the conclusion that animation or augmented reality is a good way to learn patterns well in online distance learning during the pandemic. Because it is a system, augmented reality technology is used to see if students' interest in learning and outdoor environments, enhancing the potential to improve learning achievement, and carry-based mobile type system when applying the results showing an increase in performance and content of recall have got interest in learning (Chin,, & Wang, 2021).
In the study by Kaya and Bicen (2019), almost all educational and training settings made use of augmented reality applications (Kaya,, & Bicen, 2019).. In this review, utilizations of expanded reality in instructive conditions of purpose apparent handiness, mentalities and the connection between benefits, as well as the connection among demeanor and scholarly accomplishment levels is expected to applications connected with increased reality in instructive conditions, and thus, understudies' disposition levels are unequivocally and decidedly saw effortlessly; they have arrived at the outcomes that it significantly affects demeanor levels and scholarly achievement.

As should be visible from the important exploration, it is accepted that expanded reality and distance schooling generally benefit understudies in examinations, while it is constantly felt that this climate will help regions and subjects that are good to go for themselves and meet well with understudies inside the field. In this exploration, planning great examination for the field is pointed. In light of the possibility that innovation based approaches can be helpful in various school levels and in various courses. Learner success in online environments can be improved when students are able to use the tools afforded by the environment. In combination with critical thinking, these tools can assist the learner in filtering through the tremendous amount of information they will encounter when searching resources to obtain useful knowledge. The instructors need to understand the importance of building a supportive online learning community. Instructors could also provide an orientation for the learners and access to the AR course. Clear expectations, guidelines and code of conduct as well as special needs of learners is essential to be discussed and addressed. Observations have shown that adequacy of these facilities varies in most higher institutions coupled with students' perception towards its effective use. This study therefore examined the students' perception on the use of AR in teaching and motivating Science Education Students in the chosen university.

Statement of the Problem

The poor performance of some undergraduates in Nigeria has been widely reported. It is also observed that the performance of many students in higher institutions is not encouraging due to in appropriate instructional strategies which do not allow the students to be actively involved in the lectures. The students just listen to lecturers without concentration or distracted by some factors that may result in reduced assimilation and low

achievement. These situations seem to have diverse effects on the effective teaching and learning of science. It is against these mentioned observations that this research was carried out to investigate the effects of augmented reality technology and students' perception on its application for motivation and learning on undergraduates in Ikere-Ekiti, Nigeria.

Purpose of the Study

The purpose of this study was to examine the effect of augmented reality technology and students' perception on its application for motivation and learning on undergraduates in Ikere-Ekiti, Nigeria. The outcome of this effort will be used to suggest steps that can enhance and improve Science Education students' performance.

Research Questions

The following research questions were raised for the study:

i. What is the level of students' exposure on the use of Augmented reality techniques?
ii. What are the students' perceptions on the effects of Augmented reality technology on teaching and learning process?
iii. Does Augmented reality technology learning motivates students towards learning?
iv. How adequate are ICT and other devices provided to the schools as perceived by students?

Research Methodology

The Population of this study consists of all Science Education Students in Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti, Nigeria in 2022/23 academic session. Simple random sampling technique was adopted in the selection of 210 students in the 100 to 300 level of study in the department of science Education of the chosen institution. Descriptive statistics of survey type was used to collect data for the study. A self designed instrument titled "Students Perception on Augmented Reality Technology (SPOART)" was used to collect data. The instrument was validated by experts in Science Education and Computer Science. The reliability of SPOART was done using the test re-test method within the interval of two weeks. Reliability coefficient of 0.78 was obtained, which was found suitable. The data collected was analyzed using frequency counts and percentage scores.

Results

1. **Research Question one:** What is the level of students' exposure on the use of Augmented Reality Technology techniques?

Table 1: Level of students' exposure to Augmented Reality Technology **techniques**

ONE	**LEVEL**	**High**	**Moderate**	**Low**
16	10	44		
TWO	18	15	37	
THREE	14	20	36	
TOTAL	48	45	117	
Percentage (%)	**22.9**	**21.4**	**55.7**	

As shown in table 1, about 56% of the students agreed that the level of training and exposure given to them on the use of Augmented Reality Technology technique is quite low.

2. **Research Question Two:** What are the students' perceptions on the effects of Augmented Reality Technology technique on teaching and learning process?

Table2: Students' perceptions on the effects of online on teaching and learning process

LEVEL	A	D	ND	N
ONE	62	5	3	
TWO	59	6	5	
THREE	64	3	3	
TOTAL	185	14	11	
Percentage (%)	**88.1**	**6.7**	**5.2**	

As shown in table 2, 88% of the students agreed that Augmented Reality Technology technique enhances effective teaching and learning process in the department of Science Education Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti.

3. **Research Question Three:** Does online learning motivates students towards learning?

Table 3: Online learning as a motivator of Science Education students towards learning

LEVEL	A	D	ND	ONE
ONE	64	4	2	
TWO	61	6	3	
THREE	59	6	5	
TOTAL	184	16	10	
Percentage (%)	**87.6**	**7.6**	**4.8**	

As shown in table 3, most(about 88%) of the students agreed that Augmented Reality Technology technique is a motivator of learning process in the department of Science Education Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti.

4. **Research Question Four:** How adequate are ICT and other devices provided to the schools as perceived by students?

Table 4: Adequacy of ICT and other devices

LEVEL	Adequate	Not Adequate
ONE	31	39
TWO	25	45
THREE	24	46
TOTAL	80	130
Percentage (%)	**38.1**	**61.9**

As shown in table 4, about 70%) of the students admitted that ICT and technological devices that enhance Augmented Reality Technology technique provided to the department of Science Education Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti are not adequate.

Discussion

Based on the findings of the study, it is clear that Augmented Reality Technology technique facilitates teaching and learning process. For instance 88% of the students agreed that the learning technique enhances effective teaching and learning process. This is in agreement with (Chin,, & Wang, 2021) views. He opined that the learning technique is now facilitating a more flexible learning approach; hence learning is made more readily available to the students especially in tertiary institutions. In the same vein, this could be an indication that students exposed to Augmented Reality Technology technique process are more motivated and perform better. Perhaps that is an explanation by (Çetin, & Türkan, 2022) that for viable learning to happens as long as the student has some good times in the educational experience and effectively takes part in the educational experience, and the connection component that plays a significant part as of now can be given by expanded reality applications. The study further revealed that the level of training and exposure given to students on the use of online-learning technique is quite inadequate. Picar, (2011) in a study stated that educators must be actively involved in the stages of online learning course development for motivational purposes and improved performance. Findings from the result also revealed that the technological and ICT facilities available in the institution of study are not enough. This implies that tertiary institutions authorities should make facilities available to student for improved performance.

Conclusion

It could be concluded that the level of training and exposure given to the Science Education Students in the institution of study on the use of Augmented Reality Technology technique is quite low and ICT devices that enhance the learning technique provided are not adequate. Although, majority of the students agreed that Augmented Reality Technology technique is a motivator of learning process and enhancer of effective teaching and learning, if they are exposed to the use and facilities are adequate.

Recommendation

1. Augmented Reality Technology technique should be encouraged and promoted in higher institutions. School administrators should create more awareness for both lecturers and students on online teaching to facilitate improved performance.
2. Students should be given constant training and exposure on the use of Augmented Reality Technology technique and students should be orientated on their roles for effective learning.
3. ICT and Technological devices should be provided and more funds released to schools for improved motivation among students in higher institutions.
4. Lecturers should also be encouraged to regularly utilize online platforms for teaching, rating and assessment among others for effective motivation and learning.

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