

VIRTUAL REALITY AND ITS CONNECTION TO HUMAN PERCEPTION

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ABSTRACT

There is a lot of potential for the research of perception-action to be realised via virtual reality (VR). The instance of investigating the outfielder issue is offered as an example of how virtual reality (VR) has helped to our knowledge of perception-action, as well as the promise and dangers of employing VR in such a work. In the context of a baseball game (and other scenarios that are similar), the term "outfielder problem" refers to the circumstance in which an outfielder is required to sprint in order to get at the appropriate position at the appropriate time in order to make a catch. It is noted that there were a number of experimental experiments in which participants were required to intercept either actual or virtual balls. Using virtual reality (VR) has a number of advantages, the most significant of which is that the researcher has total control over the virtual environment. This gives the experimenter the opportunity to investigate scenarios that do not exist outside of VR, which in turn enables robust hypothesis testing. There are a number of elements that have been discovered as being relevant to the effectiveness of the virtual reality trials. These aspects include the absence of haptic feedback in VR setups that have been utilised in this paradigm up to this point, the particulars of the optics that were shown to the participants, and the area that was available for mobility. However, we come to the conclusion that we have high expectations for the role that virtual reality will play in perception-action research. We believe that it is vital to do a detailed comparison of task behavior in virtual reality with that of behavior outside of VR.

Keywords: virtual reality, connection, human perception

INTRODUCTION

Tomorrow's children are its future. A healthy country starts with healthy children. A sick child causes stress for the entire family, but friendships and family ties suffer when the condition is chronic. Children's everyday routines are impacted by illness. While there are numerous illnesses that affect children, cancer is one that affects the entire family emotionally. Cancer is one of those diseases that, from the moment a child is diagnosed with it, affects the entire family. The word cancer is always connected with death. Children at varying ages respond to cancer treatment in different ways. They experience fear and anxiety. This is demonstrated by poor eating habits, insomnia, or issues at

When a kid is diagnosed with cancer, the rest of the family also experience feelings of hurt. On the other hand, it causes parents to have feelings of guilt since they are unable to prevent the condition from occurring. Without regard to the nature of the illness, it is of the utmost significance to assist the kid in leading a life that is as normal and satisfying as possible. Children who are afflicted with chronic illnesses experience discomfort and fear, and they are persistently under the impression that they are not allowed to

play. One of these conditions is cancer, which causes youngsters to have a large number of restrictions placed on their ability to play because of their impaired immune system.

In industrialised nations, more than eighty percent of children who have been diagnosed with cancer are cured, but in underdeveloped countries, just twenty percent of children are healed. Because of the low socioeconomic conditions of the families and the lack of affordability of cancer treatment, this is the situation that has arisen. owing to the fact that cancer therapy is relatively expensive and many patients are unable to afford it owing to financial constraints, socioeconomic status is an extremely important factor in the treatment of cancer. Every year, around three million children between the ages of zero and nineteen are diagnosed with cancer, making it the leading cause of mortality among children. This happens all across the world.

In our ever-changing world, learning is a path of action that every single individual should always pursue. The conventional educational approaches are based on the information that is obtained via the reading of books and the instruction of instructors, which must then be practically implemented. Within the context of this digital era, the implementation of innovative teaching and learning approaches that make use of cutting-edge technology is of the utmost significance. In the classrooms of universities, there is a strong emphasis placed on the implementation of information and communication technology (ICT). They are essential instruments in the field of science and have the ability to impact both the teaching and learning of science. An experience may be gained by the use of three-dimensional (3-D) virtual reality (VR) interfaces through the use of e-learning activities, software games, and simulated labs.

It is imperative that corporate sectors provide their personnel with ongoing training. Many different technologies and methods are being investigated for the new paradigm known as "Learning for Life" as the need for it continues to increase. As a result of the expansion of the Internet, individuals working in organizations, educational institutions of higher learning, the government, and other sectors are now able to access online education. People's learning styles have been affected as a result of the proliferation of information on the Internet and the incorporation of information and communication technology (ICT) into educational settings. The current technology of the web makes it possible to provide individualized training to every individual at any time and in any location. The process of enhancing learning via the use of the Internet is referred to as "e-learning."

Students learn via social networks, as well as by participating, collaborating, and immersing themselves in digital environments in order to seek, share, and develop information for the purpose of self-realization. The education system continues to evolve and alter, moving towards a participatory and interactive learning paradigm. The vast majority of online learning platforms are made up of HTML pages that include Flash material, videos, and photographs, among other things. In their natural state, they are all two-dimensional. The vast majority of web-based course delivery methods need the student to read the course text and see either static or animated graphics. Interactivity is lacking in them.

There are several benefits associated with e-Learning, the most important of which are its adaptability, ease, and the capacity to work at any time and location as long as there is an internet connection. In addition, there are financial and time savings due to the absence of the need to go to and from the teaching campus. The e-courses that were designed would serve to enhance and complement the teaching that takes place in the classroom, so making learning more efficient. In addition to that, it would also serve as a resource for

keeping one's knowledge and abilities in the subject of study from becoming obsolete. Because of the ever-evolving nature of digital information assets, our ways of thinking about creativity, innovation, and education are undergoing a substantial transformation.

Learning may be improved via the use of e-learning due to the fact that it provides:

- 1) The elimination of time and space constraints in comparison to how conventional lessons are conducted.
- 2) Learning that is self-regulated is made available.
- 3) The use of effective and interactive teaching and learning methodologies enables individualized learning that is tailored to the specific requirements of each student, as well as the potential of project-based instruction.
- 4) A collection of educational resources and services.
- 5) A complete guarantee that the information is accurate.
- 6) the incorporation of interaction into the communication process.
- 7) Cost-effectiveness in comparison to the conventional method of learning and teaching that takes place in lectures.

The term "e-learning" refers to a kind of technology that includes the delivery of educational content in a digital format over the Internet. This technology facilitates learning by removing obstacles related to time, distance, and socio-economic status. Additionally, it is a helpful educational tool that can be used in a conventional classroom setting. The formulation and implementation of learning standards are essential components of an efficient e-learning software system. There are a number of aspects that influence learning, including the students' prior knowledge, their motivation and interests, their learning tactics and objectives, and the broader setting in which they are learning. Learners should be able to modify and participate in a specific activity within the discipline, and the system should be a dynamic interactive depiction of that activity. When it comes to learning, students should not be seen as passive consumers of knowledge but rather as active participants who interact with content that is sensitive to their activities. Learners are able to verify their comprehension and learn from their errors when they engage in interactive activities, which leads to deeper learning.

PROBLEM OF STATEMENT

It has been suggested that virtual reality (VR) is a technological breakthrough that has the potential to facilitate learning. This research investigates the ways in which virtual reality (VR) might be used as a method of enriching, motivating, and stimulating students' knowledge of certain events, particularly those for which the conventional concept of instructional learning has shown to be either unsuitable or challenging.

1. To create a framework for improving access to virtual reality settings for people with disabilities, with the goal of using this framework to promote improved visualisation.

2. To build a framework for a desktop virtual reality application for education, with the purpose of researching and contrasting the various approaches to education, as well as evaluating the efficacy of e-learning via virtual reality.
3. To create an application for electronic training that makes use of virtual reality and three-dimensional web technology in the outsourcing business of producing structural components for the construction of steel beams and columns

The recommended designs are implemented on a variety of platforms according to their respective requirements. Virtual Reality Modelling Language, often known as VRML, is a language that allows for the integration of virtual reality technology with World Wide Web technology. For the purpose of storing and transmitting three-dimensional information over the internet, the industry standard description language is known as VRML. Using VRML, virtual worlds may be specified in a text format that is legible by humans and in a way that is independent of the device being used.

REVIEW OF LITEATURE

Corey Bohil (2019) As an alternative to reality, virtual reality (VR) provides users with an experience that is both sensory and psychological in nature. The virtual reality (VR) technology is more than simply a single technology; rather, it is an ever-expanding collection of tools and methods that may be used to generate the psychological experience of being in a different location. The fundamental observation that information is destined to be processed by a human sensory and perceptual system that has evolved to interact with regularities occurring in the physical world is the foundation upon which the techniques that are used to create compelling virtual environments are built (Gibson, 1966, 1979). It is possible to provide the system with sensory inputs that simulate and effectively mimic those encountered in nature. The more sensory inputs that are provided, the more convincing the resulting perceptual and cognitive experience will be for the user. The ultimate objective of those who design virtual reality environments and those who use them is to create a computer-generated simulation that is indistinguishable to the user from its equivalent in the real world. Reaching toward this goal has already enabled us to realize some of VR's potential for use in training, engineering, scientific research, and for providing uniquely gratifying entertainment experiences (Biocca, 1996; Hawkins, 1995). Illusions for the senses The hardware and software used to create a VR system are designed to replicate the information available to the sensory/perceptual system in the physical world. In other words, a computer and its peripheral devices produce outputs that impinge upon the body's various senses, resulting in convincing illusions for each of these senses and thus a rich, interactive multimedia facsimile of real life. There are system components that create such illusions for each of the senses, in particular for vision, hearing, and touch.

Hari Thiruvengada (2022) Augmented reality (AR) is defined as “a live direct or an indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input, such as sound, graphics or GPS data.” It is not uncommon to come face-to-face with smart devices that are equipped with multiple embedded sensory inputs such as mega pixel camera, microphones, speakers, high definition (e.g. Retina) displays, 3D displays, holographic displays and pico-projection technologies. Such technology has enabled application designers and developers to package information succinctly and efficiently without loss of clarity. Recently, AR applications (e.g. iPhone World Lens, Google goggles) have drawn mainstream attention. There are also programmes within the military that are considered to be

a significant step forward, such as the DARPA Sandblaster programme. These developments in augmented reality have been influenced by developments in a variety of technologies, such as the low cost of advanced processors, displays that are lightweight, and ubiquitous computing technologies that are afforded by ubiquitous devices such as smart phones, tablets, and other similar devices. At the moment, however, there are no human factors standards that can be utilised to assist in the development. These technologies have immense potential to increase our skills, but there is also the chance that they constitute a nuisance or a severe safety concern. Specifically, faulty system latency, dependability, display design (e.g., clutter or resolution) might lead to mistakes. The purpose of this session is to examine what research is required to create these criteria. It is probable that there is no one set of standards, but building a framework for these standards would go a long way towards bridging the research-application divide.

Angie Johnson (2020) Recent study reveals that Virtual Reality (VR) as a communication tool to transmit design intent and building processes in the built environment sector has been adopted to varying degrees. Currently, the usefulness of VR has been proved from conception to the final phases of projects in various disciplines, although its promise within the Built Environment has not been achieved, despite a variety of successful demonstrations. There is worry that the current use of VR undermines its full potential, predictably, since environmental representations rely largely on the visual modality, regardless of the multi sensory nature of the spatial experience. In addition, there is a significant scarcity of study examining the intricate interaction between environmental design and the user, such as the function of attention or conceptual interpretation. This research tries to highlight the challenges affecting the employment of VR models to improve communication for the Built Environment with special reference to human perception concerns.

Frank Zaal (2021) Virtual reality (VR) holds great promise for the study of perception-action. The instance of investigating the outfielder issue is offered as an example of how VR has helped to our knowledge of perception-action, and of the promise and drawbacks of employing VR in such a job. The outfielder difficulty refers to the circumstance in a baseball game (and related situations) in which an outfielder needs to sprint to get to the proper spot at the appropriate time to make a catch. Several experimental studies are discussed in which participants had to intercept real or virtual balls. The major additional advantage of employing VR is the fact that the virtual environment is totally in the hands of the researcher, which permits investigating circumstances that do not exist outside of VR, thus providing robust hypothesis testing. A variety of aspects connected to the effectiveness of the VR studies are highlighted, such as the absence of haptic feedback in VR setups utilised in this paradigm till now, the peculiarities of the optics provided to the participants, and the available area for mobility. We believe that it is vital to do a detailed comparison of task behavior in VR with that outside of VR, but conclude with enormous expectations about the significance of VR in perception-action research.

Antonia F Hamilton (2018) As virtual reality (VR) technology and systems become more commercially available and accessible, more and more psychologists are beginning to include VR as part of their methodology. There are significant benefits associated with this method in terms of experimental control, repeatability, and ecological validity; nevertheless, it also has several limits and hidden dangers that may cause the beginner user to get distracted. A evaluation of the available instruments and a mapping of the terrain of conceivable systems were the goals of this research, which attempted to assist the psychologist into the unfamiliar realm of virtual reality (VR). In order to highlight the difficulties that are now being

addressed by research, we make use of examples of state-of-the-art research. These examples include embodiment, the uncanny valley, simulation sickness, presence, ethics, and experimental design examples. Lastly, we argue that the most significant obstacle for the industry would be to construct a fully interactive virtual person that is capable of passing a virtual reality Turing test. We believe that this would be possible only via the collaborative efforts of researchers in the fields of psychology, virtual reality technology, and artificial intelligence.

The year 2018's Yipaer Aierken For all intents and purposes, a world is both real and virtual. Whether it is referred to by a different term, virtual reality has always been a part of the human imagination. Virtual reality, in a practical sense, refers to the virtual reality headset that people use with their mobile phones in order to play virtual reality games. This is arguably the most prevalent use of the term today. The study investigates the ways in which virtual reality may be used in artistic settings. Figure 1 depicts Bosch's masterwork, which is titled "The Garden of Earthly Delights." An application known as Bosch VR, which was developed by BDH (Burrell Durrant Hifle Design & Direction LTD), is a three-dimensional adventure into a complex environment that gives users the opportunity to ride a fish through the Garden of Eden.1. The placement of masterpieces in a virtual reality environment raises the question of what the objective or purpose of doing so is. This article will make an effort to provide answers to these queries. In point of fact, the use of virtual reality technology in the field of art has not yet been thoroughly investigated.

IMPORTANCE OF THE STUDY

It is the responsibility of large educational institutions to facilitate the adoption, development, and use of technology in the classroom and learning environment. Students' motivation may be increased via the development of novel learning environments, which can also stimulate shared experiences, encourage active engagement through repeated practice, and promote activity. The World Wide Web has evolved into a valuable educational resource that not only encourages and supports the learning of students but is also receiving a growing amount of usage in the delivery of course material. People are inspired to develop interactive apps by the technical substance of virtual reality as well as the creative attractiveness of virtual reality. To produce the impression of virtual reality, the real-time interactive features enable users to be aware of the reaction of their actions at any moment. This allows users to experience the simulation. By using a visualisation tool, one may increase their level of attention and curiosity. Through the use of a virtual reality environment, the apps seem to have the potential to make e-learning activities more participatory and in tune with nature. When users work with a browser that is capable of 3D viewing, it is possible for them to get a 3D environment that allows them to observe the whole environment in 360 degrees via the capacity to zoom in on the scene, as well as swiftly traverse among the various locations in the world and view the world from a variety of perspectives. The consequence of modelling three-dimensional things is that it increases the user's attention and the amount of interaction they have with the items, much as in the real world. Given this, it is necessary to have a system that can facilitate the development, modification, and updating of a virtual environment in a quick and effective manner.

OBJECTIVES

1. To assess the physiological and psychological well being in control and experimental group of children hospitalized with cancer before and after administration of therapeutic play using virtual reality computer games

2. To assess the effectiveness of therapeutic play using virtual reality computer games in promoting physiological and psychological well being of children hospitalized with cancer.
3. To determine the level of acceptability among experimental group of children hospitalized with cancer on administration of therapeutic play using virtual reality computer games.
4. To find the association between selected background variables and physiological well being of children hospitalized with cancer.

HYPOTHESIS

H01: There will be no significant difference in physiological and psychological well being between the assessments in control and experimental group of children hospitalized with cancer.

H02: There will be no significant difference in physiological and psychological well being between control and experimental group of children hospitalized with cancer before and after administration of therapeutic play using virtual reality computer games.

H03: There will be no significant association between selected variables and physiological well being in control group and experimental group of children hospitalized with cancer before and after administration of therapeutic play using virtual reality computer games.

RESEARCH METHODOLOGY

The term "methodology" refers to the process by which the data was collected and analysed in order to answer the research questions or analyse the research topic. This is the definition of the methodology in the research study. A systematic technique is included in the research methodology. This procedure is followed by the researcher from the point of first identification of the issue all the way through to the point of conclusion. The purpose of this chapter is to provide a concise explanation of the various actions that were carried out by the researcher who conducted the study. It encompasses the research methodology, the research design, the research environment, the population, the sample, the sampling technique, the creation and description of the tool, the content validity, the reliability, the pilot study, the protection of human rights, the process for data collecting, and the plan for data analysis.

Increasing the level of physiological and psychological wellbeing of children who are hospitalised with cancer was the purpose of the current research, which was carried out to evaluate the usefulness of virtual reality computer games in contributing to this improvement.

Research design

A research design is the comprehensive strategy that one employs in order to get an answer to the research topic. The frequency with which data will be gathered, the kind of comparison that will be carried out, and the location of the study are all aspects that are outlined in a research design. The most significant methodological design that the researcher works on in order to carry out a research study is included into a research design. The research design that was chosen for the purpose of carrying out this study was a genuine experimental one, consisting of a pre-test, a post-test, and repeated follow-ups.

The following conclusion may be drawn from a comparison of the learning outcomes achieved by students as a result of the study's implementation of the different approaches.

Table: 1 demonstrating that student learning outcomes are greater than those of the lecture and PFV

Roll No	Lecture	VFV	PFV
100	2.8	4.7	3.8
101	1.0	0.3	0.5
102	2.8	4.7	3.8
103	2.9	4.8	3.9
104	0.5	0.2	0.1
105	2.9	4.8	3.9
106	3.0	4.9	4
107	2.2	0.2	3.2
108	2.5	4.6	3.5
109	2.7	3.9	3.7
110	2.4	4.9	3.5
111	3.0	4.7	4.1
112	2.1	0.2	1.3
113	3.1	4.8	4.3
114	0.6	0.2	0.3
115	3.0	4.7	4.1

Graphical Representation

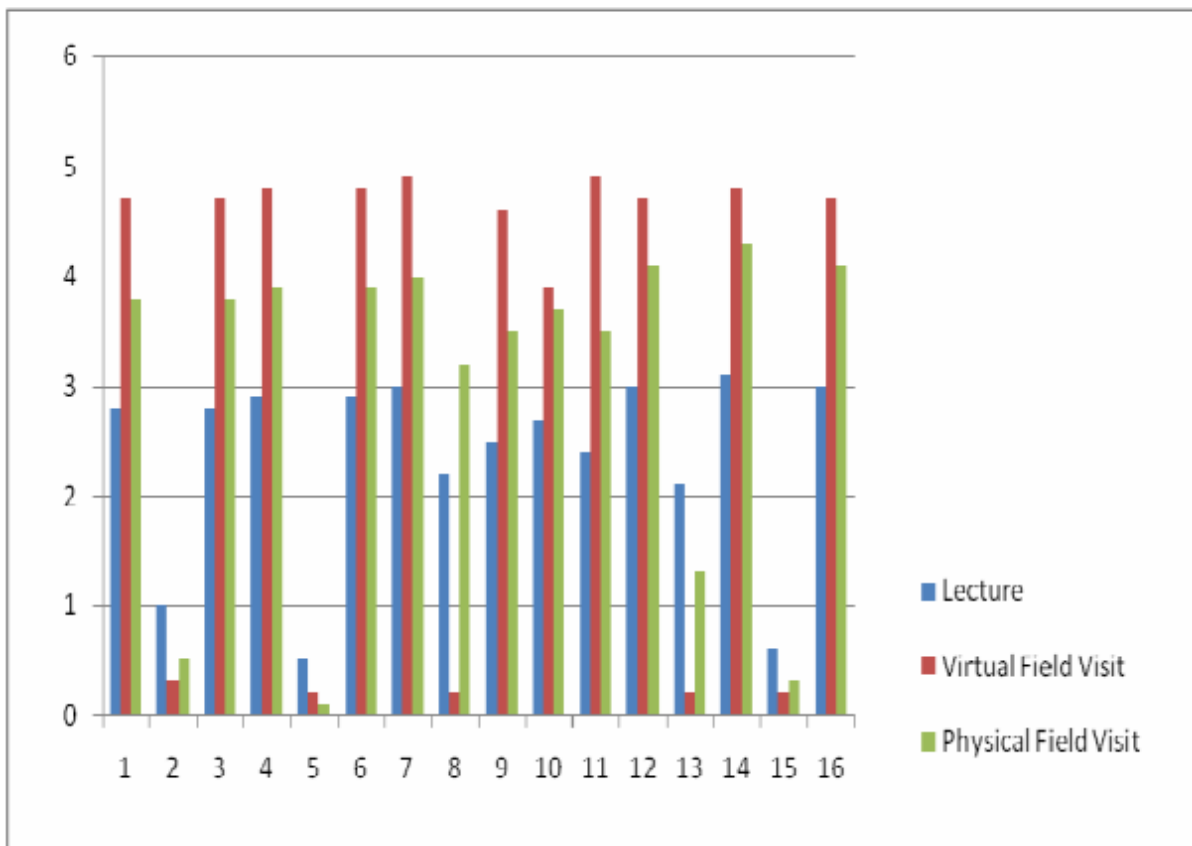


Figure 1 Higher learning outcomes for students compared to other actually used approaches

It is a clear illustration of the fact that the learning result of the pupils is superior to that of the other approaches that are used in practice.

Following are the results that were discovered via a comparison of the attitudes of students through the study that was carried out against both virtual and physical field visits.

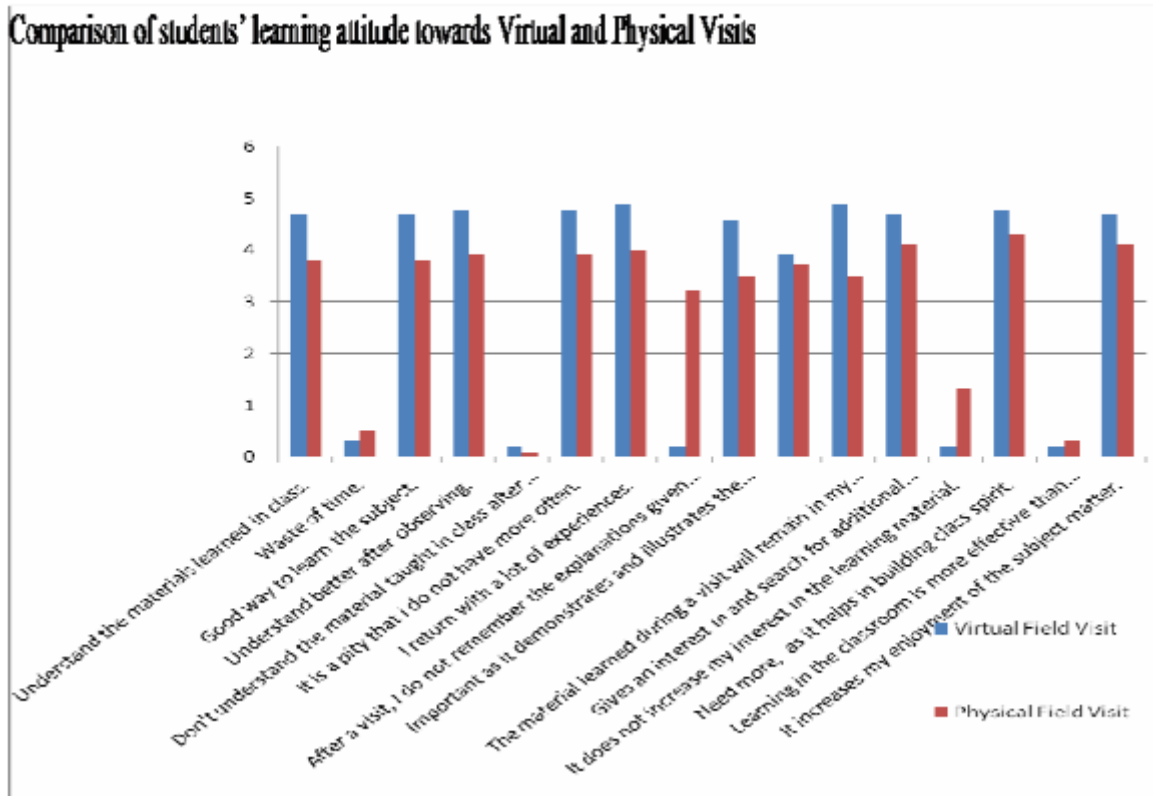


Figure 2 Comparing the learning philosophies of students about in-person and virtual visits The virtual field tour is dominated by the learning attitude of the students..

CONCLUSION

Today, e-learning is a relatively new method of instruction. In the wake of the advent of Virtual Reality (VR) technology, which has the potential to provide a user-friendly interface between humans and machines, it undergoes further research and refinement. Learning and instruction have been significantly improved as a result of the use of virtual reality technology in educational settings. The pattern that incorporates virtual reality (VR) and e-learning technology not only enriches teaching patterns but also enhances the learners' capacity to analyse and solve issues. This body of research exemplifies the significant function that virtual reality (VR) technology plays in online education and training. A significant shift is now taking place in the field of education. Because technology plays such a significant part in the lives of today's students, educational institutions are no longer able to satisfy their requirements just via the use of classroom-based teaching. Providing organisations with limited resources and budgets with the opportunity to get high-quality education and training is made possible via the usage of e-learning. There is a difference between studying face-to-face and using this method, and it is not always a suitable replacement for the conventional classroom setting. The two of them might be quite complementary to one another. The construction of knowledge portals for the purpose of information exchange, as well as the development of standard digital contents and management techniques, are all components of the establishment of high-quality e-Learning technologies. 'Page turners' are no longer the only thing that e-learning is. Instruction that is meant to keep the student engaged via the use of effective teaching approaches is called immersive instruction. The proliferation of technology is pushing the need to teach and learn in new ways, and e-learning is also undergoing transformations as a result. It is no longer

sufficient to just provide a course over the internet; rather, it is necessary to make use of technology in order to facilitate the learning process.

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