



The Use of Virtual Reality in Improving Vocational Students' English Writing Skills

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Abstract. The goal of this study was to determine the effects of employing virtual reality applications to help vocational students enhance their writing abilities. The present study, which used a Sequential Exploratory Mixed Method, was motivated by the virtual potential offered by VR technology and sought to determine the influence of VR experience on the improvement of vocational learners' writing abilities. 29 vocational students enrolled in the second semester of the State Polytechnic of Creative Medi's Game Technology study program first participated in an interview with semi-structured questions and saw a virtual reality and a traditional 2D film from different historical eras. Following completion of a brief writing assignment, learners were re-interviewed to ascertain their perspectives following the interaction. The findings indicated that (1) Virtual reality technology was familiar to vocational students, (2) Although virtual reality exposure had no effect on short-term writing abilities, it was shown to be beneficial over time, and (3) Despite the fact that most of the students liked VR videos, there were a lot of technical problems with them, such as bad video quality and physical pain. Additionally, research in the area of language training was undertaken using virtual reality technology.

Keywords: English · Vocational · Virtual reality · Writing · Descriptive text

1 Introduction

This lightning-fast evolution of information and communication technology has been used to a broad variety of activities and objectives. One of these cutting-edge technologies is virtual reality (VR) that has gained widespread popularity as a technological application. Virtual reality encompasses a range of activities, including gaming, simulation, and teaching. While virtual reality was formerly considered an expensive technology, it has become considerably more affordable in recent years. Due to virtual reality's interdisciplinary character, it has a variety of definitions in related literature. The phrase "virtual reality" refers to systems which immerses people in a virtual world and allows them to take part in it using a variety of methods [1]. Rheingold [2] characterized VR as "experiences in which consumers may roam about and investigate three-dimensional environments from all angles." People, machines, and other things can communicate with each other through virtual reality, which Hay [3] says is a technology that allows

people, machines, and other things to interact with each other through the use of computers and a variety of peripherals. The term “virtual reality” may be defined as a novel technology that allows human interaction in a vibrant medium via the presentation of sensory systems with realistic sensations as if they were in a different location [1].

By enhancing the physical presence of students and delivering authentic sensory sensations, in addition to facilitating communication through several media via immersive virtual learning environments in three dimensions (3D), developing applications of virtual reality (VR) are broadening the horizons of computer-assisted language learning [4–8]. Google Earth is the first virtual globe with a three-dimensional software depiction of the Earth among rapidly emerging virtual reality technologies that use GPS awareness. Google Earth is a free program that creates a virtual depiction of the whole earth using satellite and aerial pictures [9, 10]. Learners may navigate the world using landmarks of nature, journey return to the past via the use of historical images, and investigate photographs from space, maps, topography, 3D structures, faraway galaxies, and the ocean’s deepest depths using a PC, tablet computer, or smartphone device for instance an Android or iOS smartphone [11].

Since 2005, Google Earth has been used into educational settings, specifically for spatially focused learning experiences in science and geography curriculum, due to the fact that it provides instructors with virtual access to an abundance of geographic data [8, 12–16]. Sheppard and Cizek [17] highlighted using Google Earth’s benefits as follows: delight and awe-inspiring experience, ease of usage: free, easy, rapid access to massive amounts of previously private information; the capacity to contextualize data (literally); and increasing the user’s comprehension of geographical, reference, or scientific knowledge via contextualization in their local, real-world settings. The low cost of Google Earth’s collaborative interactive technology also drew the attention of academics to the possibility of learning more in foreign and second language classrooms [18–20]. For instance, Bo-Kristensen et al. [19] introduced not just to encourage students to submit tags to Google Earth or Google Maps through Mobile City and Language Guides, but also to combine instructive circumstances and formal language concerns into the context of studying Danish. To provide assistance to students of English as a foreign language (EFL) at two private universities in the Middle East improve their oral presentation abilities, Awada and Diab [18] used Google Earth and a platform based on the Wiki to create an online community. However, research on Google Earth’s incorporation into different vocational English language education programs for English Learners is currently limited. As such, this research is being done to serve as a reference for integrating Google Earth into different forms of vocational English language instruction for English Learners.

Specifically, the Google Earth VR application was used in this research with the goal of taking advantage of a Google Earth’s isomorphism “virtual trip” to assist ELs in improving their expository writing skills. Most of the ELs struggle with writing; in fact, it has been suggested that writing is their least developed English language competence [21]. The linguistic resources needed to accomplish an expository writing assignment are frequently lacking in even intermediate-level ELs, either because they are unfamiliar with the characteristics of informative literature or because they lack the English proficiency necessary to effectively communicate their point [15, 22]. It is possible to support the Four

Es model of learning (engaging, exploring, explaining, and evaluating travel through the virtual [15] by utilizing Google Earth to construct a virtual voyage. A similar process of discovery and creativity can be seen in writing [23], which is an intricate, convoluted, dispersed, and communicative one. As a microcosm of the world's diversity, the VR teaching environment for Google Earth may be compared to a kaleidoscope. The user interface's intangible cultural dimensions are tailored to diverse backgrounds of English language users, reactivating past familiarity with their indigenous culture and instilling confidence in their cultural understanding and self-identity as a result of the process. The usage of virtual reality in the writing class has been discovered to improve learning results while also assisting in the further internalization of those learning processes via the development of cultural fluency in the participants. Furthermore, due of the format in writing of an expository text, it may assist learners in improving their linguistics reading and composition or writing abilities in a certain field of study. This includes the listing of the primary subject and illustrative instances; the arrangement of words in a certain sequence for the purpose of expressing meaning; the reason(s) for the statement's occurrence; comparison/contrast of illustrative examples demonstrating how the subjects are similar or dissimilar; and the issue/a solution comprised of supporting material that outlines the causes and resolutions of the problem [24].

Secondly, writing is a multidimensional task that requires the selection, combination, and organization of words in order to generate meaningful ideas. Through the use of streaming technology and 3D visuals, the rich and dynamic 3D virtual learning environment provided by Google Earth gives satellite photos of local places. Students are motivated and excited by Google Earth's real-world experiments [8, 24]. Incorporating Google Earth's virtual reality educational setting blends sights, motions, spatial layouts and opportunities for cultural immersion [8], all of which help participants' writing artifacts change their knowledge structure [16, 17]. According to a study on how people use Google Earth, it helps people learn spatial thinking and other important technology and thinking skills [14, 15]. A virtual journey using Google Earth may assist students in internalizing their expository writing by giving them cultural immersion experiences that are based on where they are and how things look. Google Earth has a lot of different features that can be used to improve and change vocational students' language learning experiences. These features include time and sequence, as well as immersion into a different culture. Furthermore, by combining Google Earth into reality, vocational language learners will discover intriguing things they would not have discovered otherwise, providing them with the schema required for writing. There is, nevertheless, a dearth of empirical study on the improvement of vocational students' English writing skills via English writing aided by virtual reality experience with Google Earth. The goal of this research is to look at how Virtual reality version of Google Earth may be integrated, more particularly a virtual tour of Google Earth, with the second semester of vocational students in order to facilitate language acquisition in English writing.

2 Research Methodology

2.1 Design

This experiment employed the Sequential Exploratory Mixed Method, in which qualitative data are assessed first, followed by quantitative results [25]. This study used qualitative data to determine VR awareness among vocational learners and afterwards quantitative analysis to evaluate writing ability among vocational learners. Thirdly, two sets of qualitative information were reviewed in order to establish students' impressions of their virtual reality experience. This study employed a within-subject approach to collect quantitative data, in which all subjects were investigated in one of two conditions: virtual reality (VR) or regular two-dimensional video.

2.2 Participants

This study included 29 vocational students from the State Polytechnic of Creative Media's Department of Game Technology. According to the competence evaluation conducted at the start of the semester, each participant was on the intermediate level on English. Additionally, each participant completed and passed a year-long English General English program. To verify the validity of the results and to account for the impact of language proficiency, saturated sampling was utilized.

2.3 Data Collection

The researcher developed a semi-structured interview form to capture qualitative data. This approach required students to respond freely to open-ended questions. Additional experts were consulted to make sure the interview form was real, and the finalization of the form was created with the assistance of from Indonesian English specialists in the language. The interviews were performed voluntarily, and audio was taped for use in later transcribing procedures.

In order to acquire quantifiable information, the students were tasked with writing a short paragraph regarding the video's topic immediately afterwards their attendance at either two-dimensional video or virtual reality sessions in order to collect information. They were granted permission to make use of a dictionary and given 15 min to complete the writing assignment. Because VR sessions were conducted in isolation, subsequent writing assignments were comparable experiments done at a remote location. Data collection for writing assignments that have been postponed were place cooperatively in a classroom environment.

To calculate writing scores, inter-rater reliability was employed; each paper was checked separately by two writing instructors and the outcomes have been averaged. Additionally, prior to judging the papers, raters were given the videos and briefed to judge each paper only on the quantity of content presented; as a result, slight grammar and spelling mistakes were disregarded.

2.4 Data Analysis

The approach of content analysis was employed to evaluate qualitative information. The respondents' replies were analyzed using audio recordings. The relevance of the transcribed content to the study subjects was determined by establishing connections between relevant thoughts in the transcription. To ensure the security of the coding throughout various processes, researchers used identical interview recordings. Coding security guarantees that several coders do not code the very same text or messages inaccurately or arrive simultaneously result at distinct intervals [26]. The investigation concluded with the creation of category and topic structures, as well as associated structures.

An alternative to repeated measurements taken in just one direction ANOVA, the Friedman Test was adopted for quantitative data analysis. The data were found to be skewed and kurtic, with substantial Shapiro Wilk values. To find any significant changes between factor levels, the Friedman Test applies the paired samples t-test to non-normal repeated measures data [27]. Due to the fact that all learners were evaluated in the same two conditions (two tiers of virtual reality and two tiers of traditional two-dimensional video), this assessment is ideal for identifying any statistically significant consequence of virtual reality experience.

2.5 Procedure

The initial component of the study was interviewing and analyzing 29 students' knowledge of virtual reality. Individuals were randomly assigned to one of two groups during the second phase: VR or Video. A virtual reality film called "Indonesia and Bali in 360 VR" was shown to one group of people at a time on seats that rotate 360 degrees. The second group saw the same film concurrently, albeit in 2D through projection on the walls. After seeing the movie, each participant was given fifteen minutes to compose a brief essay on "Indonesia and Bali in 360 VR," in which they were urged to incorporate as much information as possible about their experiences. Following a day, individuals who wore virtual reality goggles and saw the film were questioned regarding their encounters. After a period of time, all participants were instructed to write on the same topic one month after the first assignment was finished for the postponed writing task.

The next data collection approach was similar to the preceding one, except that participant in the VR group were switched to the 2D conventional video group. Additionally, the previous video team documented all virtual reality operations. Throughout this procedure, the learners were shown a video on "Wonderful Indonesia: Bali." Each learner was exposed to both traditional 2D video instruction and a virtual reality experience in this fashion. Two raters then graded the learners' papers.

3 Results and Discussion

Although VR had no influence on the writing abilities of vocational students, it did have an effect on long-term memory. Additionally, the results suggested that vocational students were aware of and debated the technology's benefits and drawbacks.

The study discovered no indication of a virtual reality's major impact experience on the writing abilities of vocational students. Quantitative research found that the two-dimensional standard television condition improved writing performance more than the virtual reality situation. Nevertheless, subsequent research found that owing to the substance of VR films, they grabbed a larger amount of student interest [28]. This focus on retention was projected to be beneficial in this respect [29]. The findings of this research contradicted these expectations; In the short run, VR exposure had no beneficial influence on the writing skills of vocational students. According to some theories, this is as a result of virtual reality, where users were completely in authority of their surroundings and were required to walk and then circle back to inspect the nuances, as opposed to two-dimensional conventional movies, which displayed every feature at the same time. As a consequence of the need to turn and look around in order to examine more information, VR users may have missed some aspects. They may have missed certain details as they twisted or shifted their heads to have a better perspective. As a consequence of such a self-control condition, the quantity of information supplied may have been influenced.

A preliminary evaluation of 2D video writing performance indicated that VR users after a month, learners who watched two-dimensional conventional video did not write as well as they should have, despite the fact that VR users outperformed students who saw two-dimensional conventional video in real time. This study demonstrates that exposure to virtual reality is advantageous for long-term recall. Additionally, a body of related research indicates that virtual reality experiences may help in retention of long-term memory and decrease the impacts of temporal impairment on memory [28, 30, 31]. In conclusion, although virtual reality is not a panacea for teaching short-term English Vocational learners to write, it has the potential to greatly increase retention and performance over time. In this way, virtual reality may be included into lengthy instructional strategies to help in retention of learning and proficiency in writing for English Vocational learners enrolled in polytechnics.

4 Conclusion

Qualitative results revealed that English Vocational students were aware of virtual reality technologies. Students were exposed to virtual reality technology through social media, classmates, and the internet, according to the research. This enhanced awareness might be a consequence of the rapid development of virtual reality technologies over the last several years [30]. Additionally, the availability of affordable VR equipment and a surge in new VR content may have improved user numbers and awareness of VR in recent years [32–34].

Apart from a few technical limitations, learners indicated favorable thoughts on the application of VR technology in vocational training. Vocational students saw virtual reality technology as exciting and encouraging. Almost majority of the students regarded virtual reality as both pleasant and useful because it induced a feeling of involvement via the simulation of a real-world learning environment. Several properties of virtual reality technologies, in particular, including enjoyment, convenience of using it, a logical user interface, and mobility, resulted in beneficial outcomes for learners. These findings validated recent research emphasizing virtual reality's feeling of realism and involvement

[30, 35–37]. Because virtual reality is a new technology, learners recognized a variety of emotional, technological, and convenience restrictions. According to research results, the biggest constraint was the quality of video. A number of issues with the VR experience have been identified before, including a poorer resolution and quality of video in VR videos in comparison to other video settings and perspectives from the actual world, as previously stated by Zara and Slavik [38]. Personal phobias were also noted as a restriction (for example, fear of heights). Additionally, numerous students expressed unhappiness with their eyewear. This study validated prior studies [39] indicating that prolonged use of virtual reality may cause a range of physiological discomforts. When compared to the benefits of virtual reality, these downsides are negligible.

The VR experience was a lot of fun for vocational students, but there were a few downsides. There is a possibility that the learners' enjoyment was prompted by the novelty of the technology and by the fact that it was their first exposure to VR. VR is not a panacea for boosting the writing skills of vocational learners and cannot provide fast cures. Rather than that, virtual reality technology should be included into language curriculum and their effect on language used in the long term of learning assessment. It needs more technological and substantive improvements, including higher resolution and quality, before it can be utilized successfully for language training.

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