Learners' Perspective of Using 360-degree Video in Reading Classroom

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Abstract

The use of technology is so diversified and adaptable to various kinds of field including mastering English language skills. In numerous studies, technology has shown that it contributes to improve their language mastery, increase motivation, and promote better comprehension. Since we are moving from IR 3.0 to IR 4.0, it is good to keep up with the current trend in technology and use it for the students' benefits. One of the technologies is virtual reality which includes the use of 360-degree video. This 360-degree video offers omnidirectional perspective and give almost realistic experience to learners especially when using together with head-mounted device. This type of video exposes students to a new learning experience that is different from watching video on the screen. Therefore, this study aims to uncover learners' perspectives about the advantages and disadvantages of using 360-degree video in reading classroom.

Keywords: virtual reality; 360 video; language learning; reading; technology in language learning

Introduction

Nowadays, video materials are pervasive in everyday lives. It is generally known as one of the effective ways to increase learner's motivation and catch students' attention in learning environment. With the current technological advancement, the incorporation of video in especially in language learning has never been more engaging and interesting in comparison when it was widely available as teaching resource in the 1970s.

In past researches, researchers showed that there are many advantages of using video material over printed texts, for example the facilitating students in linking theory and real-life situation, promoting independent learning, boosting curiosity, encouraging critical thinking, and helping students to remain focused (Bajrami & Ismaili, 2016; Shephard, 2003; Syafrizal, 2019; Wagener, 2006). Also, videos help students to understand cultural background information of the topic being discussed and recognize their emotion and attitudes of the learning materials (Bajrami & Ismaili, 2016). Whether a video is presented in authentic setting (i.e. news, film, documentary) or specifically created for an English language learners (ELL), both types contribute positively in language learning. In addition, the transition from black and white video to 3-dimensional video, have provided a more realistic and alive experience to the learners, thus enrich their knowledge of a subject. It is also so versatile and can be used in various instructional setting in different ways, for example, modelling behaviour in given setting (Saiman et al., 2013), presenting knowledge content, encouraging discussion, self-study and a mode of evaluation (Bajrami & Ismaili, 2016).

Previously, the 2D and 3D videos are generally used as pre-skill (i.e. pre-reading, pre-writing) activities to prepare students for before task-based lessons. But now, with the existence of VR or 360-degree video, teacher can try to incorporate these types of videos as part of teaching and learning materials. For language learning, especially reading, the element of VR and 360-degree video seems to have potential to elevate students' experience in comprehending the reading materials effectively. When reading a text, past experiences or background knowledge are essential to understand the content of the text. Besides, reading is about connecting with what the readers know and the information in the text. Comprehension will not be achieved if the learners do not have enough background knowledge.

To make learning more meaningful, a set of experience or prior knowledge are deemed to be conveyed in the reading activity. The use of video was seemed to fit with the necessity to provide background knowledge before reading. However, with the introduction of VR and 360-degree video in the world of technology, there are not many researches discuss I the perspective of the learners whether the use of 360-degree video using HMD brings the same effect as the 3D video on a display (e.g. projector, desktop computer). This study will focus on 360-degree video and not VR video due to the nature of 360-degree is more suitable in language classroom and many learners can experience this type of video in a classroom setting. This study aims to explore to what extent does the use of 360-degree video using HMD can or cannot facilitate in the pre-reading stage among undergraduate students and what are the challenges that the students face when using 360-degree video in reading classroom.

Literature Review

Technology in Language Learning

Language learning has undergone major changes since the boom of technology. Today, learners do not have to pore over stack of textbooks, refer to bulky bilingual dictionaries in searching word meaning and rely only on teachers to give information. Technology such as computer, mobile phone and Internet has made language learning easier and convenient. Also, it is more engaging, fun, and interactive, hence lower their anxiety in learning language. Krashen (1985) posits that learners with positive attitudes and emotions promote better success in language acquisition. By applying technology-based teaching strategies in a stress-free environment, language users will be able to obtain new knowledge effectively and efficiently. It is undeniable that technology is one of the most important means to enrich students' learning experiences.

Multimedia is a common tool in technology-assisted language learning because of the dynamic form of content it can offer to the learners. According to Ragan et al. (1993), multimedia instruction decreases learning time by 30% compared to traditional instruction. Drilling exercise and content delivery can be conducted outside the class time with the help of technology. Moreover, learners can spend more meaningful activities in class and have more opportunities to explore the language outside the class. Bani Hani (2014) found that the most essential benefit in utilising technology in learning were providing immediate feedback, motivating students' learning, promoting exciting and fun environment, and encouraging interaction among learners. Thus, the usage of technology could help in providing a conducive learning environment to the students and have better chance of successful learning.

Video Technology-Based Language Learning

The use of technology has enriched the teaching and learning experience over the past decades. This movement has encouraged the development of computer software, multimedia technology, interactive videos, and web applications such as podcast and blog. In language learning context, one common material that in language learning used is video. Video is helpful and suitable for language learners because it displays content that are communicative, embedded with cultural content, which demonstrate how the language is used in a particular context (White et al., 2000). In addition, the audio and visual elements in a video, helps learners to contextualise the language better. White et al. (2000) also posited that video may offer an important input base for the development of schemata to printed text.

Using video as part of teaching and learning resources is quite prevalent in the 21st century learning classroom. It is quite common especially among language teachers to embrace latest trend in technology into their classroom (McNulty & Lazarevic, 2012). Currently, new technology has driven the innovation of more immersive videos, such as virtual reality (VR) video and 360-degree video. These videos can be played on a display or projectors arranged in a sphere. When the user is immersed, it means that the user is absorbed or engrossed in a virtual world. This experience way beyond the 2D or 3D experience watched on a display. Nevertheless, there is a slight difference between VR and 360-degree video. VR video is more immersive than 360-degree video, where the viewers can interact with the video, for example walking anywhere in the given space or moving their arms to draw a virtual building. The viewers have the authority and power to decide on their exploration or products created. However, for 360-degree video, viewers get a full 360-degree view from the creator's first-person point of view, almost like VR video, but with limited control and interaction. The creator has full control on what to show to the viewers. Brown (2020) stated that both technologies are indeed exciting but serves different purposes. Virtual reality allows viewers to go into exploring a new world, while 360-degree video is great for real-life applications. From the definition and applications of VR and 360-degree video, we can see here there is a potential of integrating these videos as part of teaching and learning in language learning.

Virtual Reality

A considerable amount of literature has been published on the usefulness of technology in learning such as Virtual reality (VR). Basically, virtual reality is a simulated experience either real or imaginary system, generated by computer, which the action is controlled by the user's body movement. The use of VR was first introduced for training and entertainment purposes (Johnson et al., 2010). However, over the years, educators foresee the potential this technology to help students understand situations or phenomena that are complex and abstract. VR permits students to visualize abstract concepts, to observe events at nuclear or cosmic levels, and to visit monuments across continents and to interact with events that distance, time, or safety factor make unavailable (Javidi, 1999). Furthermore, the artificial environment allows learners to manipulate the space by observing the cause and effect of certain actions. These activities encourage students to master, retain and generalize new knowledge when they are actively involved in knowledge construction through hands-on learning (Erenay & Hashemipour, 2003). The preferences of today's learners are different from learners 20 years ago. Therefore, educators should consider to integrating new technologies and devices in teaching and learning process.

Reading skills

The use of video in language learning is pervasive since the introduction of television. The experience that videos can offer to the audience supersede the experience of reading alone. Marzano (2004) asserted "what students already know about the content is one of the strongest indicators of how well they will learn new information relative to the content". If learners have adequate prior knowledge, they are able to 'make sense' of the ideas in the reading text. Moreover, the ability to connect their prior knowledge to the main ideas discussed in the reading text allows learners to comprehend, interact, critique, and evaluate the text. The multimodality that video supplies such as visual and sound helps student to understand and picture the issue being discussed more clearly.

Reading is a process of connecting what you know with what you read in the text. If the text is unknown to the students, the comprehension may be hindered. Reading is deemed as one of the skills that is prevalent to succeed in English language. Lack of knowledge of the content and vocabulary in the target language will slow down the process of language acquisition. Reading without understanding the meaning is wasteful because the purpose of reading to understand the content and able to apply it in reading. Without enough exposure to the content of the target text, it can hamper the understanding and make them difficult to improve their reading skills.

Schemata is one of the important components in developing reading skill. It can be collected through observation, experience, and reading. The more students are exposed to the world, have more reading

or world experiences, it is easier for the students to comprehend the text (Lent, 2012). Previously, the traditional reading lesson, is print-based text and teacher-centred. The learners' source of experience is also limited due to many factors such as lack of facilities, socioeconomic factors, and lack of motivation. But since 1970's, the use of videos to teach reading has been popular because of the integration of visual and audio in 2D. Then, over the years, the quality has become better and it started to shift from 2D to 3D pictures. Now, the current technology has permits more immersive videos, which offer a realistic and exciting experiences.

However, students nowadays do not read much about something that is valuable to them, that can help them to increase their knowledge and vocabulary. Students prefer to browse the internet and social media and read articles that are shown in the newsfeed. The abundance of information and news on the Internet, allow learners to choose what they want to read and naturally they prefer text that is sensational in terms of content and relatively easy and short. This will limit their understanding of important issues. The introduction of VR and 360-degree videos seems to offer a great potential in boosting curiosity of topic that is important and motivate them to read subsequently. Since the focus of this study is language learning specifically in reading, 360-degree video is more suitable to expose learners to new experience as it is narrative and comes from the creator's first point of view. Thus, this paper intends to answer these research questions:

    i.   Is there any change in terms of performance after watching 360-degree video?
    ii.   What are the students' opinions of using 360-degree video as one of the learning tools?
    iii.   What are the advantages and disadvantages of using this technology?

Method

This study employs quantitative and qualitative method. For quantitative method, an experiment was conducted to find out whether there was a difference in terms of performance between pretest and posttest. Next, for the purpose of obtaining further understanding about students' opinions and experiences after using 360-degree videos in reading activities, a group interview was conducted. The experiments required the students to take pre-test and post-test of reading questions. The questions were answered on an online platform, Socrative.

Participants

This study involved thirty students, who were undergraduate students who enrolled in English for Academic Communication course. The students participated were either Year 1 or Year 2 students. This course is a compulsory subject to be taken by all students since it is one of the proficiency courses offered and aims to equip students with the four language skills (i.e. listening, reading, speaking and writing) and study skills for academic success. It was conducted twice a week for two hours per session.

Materials

The video materials were obtained from Youtube, websites that has the largest collection of 360-degree videos. There were a few stages involved in selecting the materials. First, researchers determined the themes for reading activities and searched using suitable keyword on Youtube. The term "360 video" and "VR video" were used together within the search string. Next, after several videos were selected, the team discussed the suitability of the videos and finally decided to use two videos. Then, the team developed reading lesson and questions based on the videos, and vetting session were performed with reading experts.

For your information, these are the two 360-degree videos that were chosen for the reading activities which were:
    i.   "Glow   Worm   Caves   of   New   Zealand   in   360°"
        (https://www.youtube.com/watch?v=QjqGlLVIAtg)

ii. "Printing Newspapers at the Los Angeles Times" (https://www.youtube.com/watch?v=p-sNyeavgas)

The duration for the first video was 2.14 minutes and the second video was 4.35 minutes. The short duration of video is recommended because it will maximise learners' concentration while watching the video (Shephard, 2003).

Procedure

The experiment was conducted in the computer laboratory. The experiment served as supplementary reading activities for students to reinforce their knowledge and application of reading skills after learning and practising reading skills two weeks earlier. Before the lesson, VR cardboard was distributed to every student and 5-10 minutes were given to brief the students about how to use VR cardboard. Then, before conducting the experiment, they were required to answer twenty pre-test questions using Socrative platform. Then, the teacher began the lesson with set induction by recalling the lesson about reading skills and strategies. Next, the students were instructed to watch the first video which was about glow worm by using the links provided. The students used the VR cardboard and watched thee videos from their smartphones. After watching the first video, teacher invited students to discuss and share their thoughts about the video. Once the discussion ended, students answered a set of reading comprehension, comprised of ten questions. The students were required to login onto Socrative and answer the post-test. The same process was repeated for the second video which was about robots at printing factory. Two weeks after the experiment, a group interview consisted of five volunteered students was conducted and took place for 30-45 minutes. A verbal consent was asked before the interview session. The students may ask questions for clarification throughout the session and the researcher could also ask additional probing questions. The video was recorded using laptop webcam and a microphone.

Data Collection and Data Analysis

The test results of thirty students were collected and analysed using Microsoft Excel and a statistical software, SPSS (Statistical Package for the Social Sciences) version 23, meanwhile the interview, was transcribed by the researchers and recorded using Microsoft Excel and Word. Descriptive statistics was applied to compare the mean scores before and after the experiment and content analysis was used to obtain qualitative data.

Results and Discussion

Quantitative data

The data gained from test scores were analysed using to the Statistical Package for the Social Sciences (SPSS) 23. To address the first research question, descriptive statistics was conducted by comparing the score means before and after experiment. The data for pretest and posttests are displayed in Table 1 below.

Table 1: Pre and posttest result

	Range	Minimum	Maximum	Mean		SD
				%	SE	
Total Pretest score (in %)	60	15	75	49.83	2.780	15.227
Total Posttest score (in %)	70	15	85	55.00	3.399	18.616
Differences	35	-15	+20	5.17	1.652	9.048

When examining the pretest score (N=30), the mean score was 49.83%, ranging from 15% to 75%. While for the posttest score, the mean score grew to 55%, ranging from 15% to 85%. The minimum score was unchanged, but the maximum score increased about 10%. From Table 1, we can observe that there was an average rise of +5.17% in the class score. About 63% of the total students showed improvement in total score, ranging from 5% to 20%. But 13% of the students showed no difference before and after treatment and 23% was decreasing in performance. In sum, the treatment showed some effect to the test scores to the two-third of the students but not the rest. In qualitative analysis, we will find out what are their opinion about the experiment.

Qualitative data

Demographics

Five students volunteered to be interviewed during the class session. Of those participated, two were females and three were male. One student was a limited user (MUET Band 2), three students were modest users (MUET Band 3) and one student was satisfactory user (MUET band 4). All of them came from engineering faculties. About VR knowledge, four students said they knew what VR is and have basic knowledge about what it is and on how to operate the VR device, but only one student was uncertain what VR is and on how to use it.

Students' opinions of using 360-degree video

Generally, all students agreed that watching 360-degree video was an exciting experience compared to watching on projector or computer screen. Since it is a new technology, many students were excited when they first experience this technology in the classroom. Students mentioned words like new experience, interesting, fun relating to their experience. Previous researchers agreed that technology does bring into fun factor in the classroom and make the classroom more interesting, which eventually motivate students to learn more (Abu Seileek & Abu Sa'aleek, 2012; Almekhlafy & Alqahtani, 2020; Bani Hani, 2014; Hussin, 2018).

> *"I think overall is ok. A new experience for the students."*

> *"It was a new (experience) for us. I feel interested to study English more."*

> *"For me, it is quite new using VR in (my) study, but it is quite interesting and fun to use."*

However, there were some concerns from them. Because it is a new technology, it requires recent smartphone and adequate knowledge to use it. One of the students witnessed difficulties faced by his friends and therefore, need to share the device with him/her. This situation disrupted the experience slightly since someone was waiting to use the device afterwards.

> *"Some students might find it difficult (to use it) as their phones are not compatible with the video."*

Advantages and disadvantages

From the interview, there were many advantages and disadvantages stated by the students. The experience offered by the 360-degree video itself was the highlight of the experiment. The students were immersed in the video and felt like they were in that place. Moreover, students can understand more about the content since it was viewed in the first point of view. The use of 360-degree videos also kept them awake during the class session because the video materials were interesting and fun to watch. It makes them feel interested to know and read more about it. This is supported by Bajrami and Ismaili (2016) that while viewing the video materials, students are able to put themselves in the vivid atmosphere and understand the pragmatics of the language used. Also, Bal-Gezegin (2014) asserted

that video serves as a remedy for students who have limited access to authentic materials and he believes if suitable audio and visual inputs are given to them, it helps them to acquire new knowledge. This "almost authentic experience" at the comfort of students' place, can lower the students' affective filter, which is critical in better comprehension.

> *"The advantages are it kept me awake during the class."*

> *"...students feel interested to study to learn more."*

> *"...the students can understand more about English."*

> *"... we can see more in that video about a place in comparison to when we use the common 180-degree video."*

> *"...when we used the device, we experienced as if we were in the location".*

However, in any new technology, there must be some disadvantages. The students agreed that the whole experience could be improved. One of the students complained that after he watched the video, he felt a little dizzy. It is also observed in a study by Johnson et al. (2020) that one participant experienced vertigo once he/she used the VR device. Other than that, some of the students, reported that the quality of the videos was quite low. Subsequently, they could not see the phrases and sentences vividly and as not sharp as what you see in real life. This is possibly due to the network connection during the activity since students have to stream the video on Youtube. Anwar et al. (2020) stated that the unstable network can cause the lower quality of 360-degree video displayed because of bitrate switching and stalling event. It is a huge challenge to maintain appropriate quality levels because 360-degree videos are extremely bandwidth intensive. In addition, one of the disadvantages of this omnidirectional video reported was they sometimes missed the text shown because was engrossed in another part of the video. Despite the disadvantages, generally, it was still an enjoyable and fun experience for the students.

Another disadvantage was the mixed technological literacy among students, has dragged the session longer that it was expected. The preparation time (e.g. distributing the device, solving technological problems) took more time than the normal reading lesson. Bani Hani (2014) also included lack of teacher training and inadequate technical support are other barriers in technology related language learning. Although the students have basic knowledge about the technology, sometimes unexpected technological glitches happened. Abu Seileek and Abu Sa'aleek (2012) also acknowledge that a breakdown while doing the technology-related activity may leave the teacher anxious and embarrassed which leads to wasting a lot of time. This is true when one participant admitted that lack of technical assistance and unclear instruction from the teacher also contributed to the disadvantages.

> *"Disadvantages, I think, it took some time to prepare for the lesson."*

> *"... after we use the VR device, we feel little dizzy."*

> *"...the teacher did not give clear guidelines on how to use it, so the students do not use it as intended."*

Conclusion

Reading lesson could be interesting and fun activity if new technology is incorporated as part of the lesson. The present study concluded the use of 360-degree video in reading lesson increased students' motivation to read English texts and understand the reading text better. As a pre-reading activity, this 360-degree video provided an immersive experience as if they were in the real location. While reading the text, they can easily connect the content with the experiences they had before, which leads to better comprehension. The high enjoyment in using the technology, leads to lower anxiety, which is

important for learners to acquire new knowledge. There is still a long way to go in applying 360-degree video or other VR technology in language learning, especially reading. Therefore, the educators should find new way and creative ways to embed modern technology in their language learning lesson, so it can benefit the students in the future.

Acknowledgment

References

Abu Seileek, A., & Abu Sa'aleek, A. (2012). Computer Assisted Language Learning: Merits and Demerits. *Language in India 12*(4 April 2012), 23-36.

Almekhlafy, S. S. A., & Alqahtani, A. A. J. (2020, Mar). The visual memory development technique: A remedial and pre-reading activity to enhance EFL learners' motivation. *Heliyon, 6*(3), e03627. https://doi.org/10.1016/j.heliyon.2020.e03627

Anwar, M. S., Wang, J., Ullah, A., Khan, W., Ahmad, S., & Fei, Z. (2020). Measuring quality of experience for 360-degree videos in virtual reality. *Science China Information Sciences, 63*(10). https://doi.org/10.1007/s11432-019-2734-y

Bajrami, L., & Ismaili, M. (2016). The Role of Video Materials in EFL Classrooms. *Procedia - Social and Behavioral Sciences, 232*, 502-506. https://doi.org/10.1016/j.sbspro.2016.10.068

Bal-Gezegin, B. (2014). An Investigation of Using Video vs. Audio for Teaching Vocabulary. *Procedia - Social and Behavioral Sciences, 143*, 450-457. https://doi.org/10.1016/j.sbspro.2014.07.516

Bani Hani, N. A. (2014). Benefits and Barriers of Computer Assisted Language Learning and Teaching in the Arab World: Jordan as a Model. *Theory and Practice in Language Studies, 4*(8), 1609-1615. https://doi.org/10.4304/tpls.4.8.1609-1615

Brown, L. (2020, 28 August 2020). *What's the difference between 360° video and VR video?* Retrieved 7 September 2020 from https://filmora.wondershare.com/virtual-reality/difference-between-360-video-vr.html

Erenay, O., & Hashemipour, M. (2003). Virtual Reality in Engineering Education: A CIM Case Study. *The Turkish Online Journal of Educational Technology, 2*(2), 51-56.

Hussin, A. A. (2018). Education 4.0 Made Simple: Ideas For Teaching. *International Journal of Education & Literacy Studies, 6*(3). https://doi.org/http://dx.doi.org/10.7575/aiac.ijels.v.6n.3p.92

Javidi, G. (1999). *Virtual Reality and Education*.

Johnson, K., Liszewski, B., Dawdy, K., Lai, Y., & McGuffin, M. (2020). Learning in 360 Degrees: A Pilot Study on the Use of Virtual Reality for Radiation Therapy Patient Education [In press]. *Journal of Medical Imaging and Radiation Sciences*. https://doi.org/https://doi.org/10.1016/j.jmir.2019.12.008

Johnson, L., Levine, A., Smith, R., & Stone, S. (2010). *The 2010 Horizon Report*. The New Media Consortium.

Krashen, S. (1985). *The input hypothesis: Issues and implications*. Pergamon Press.

Lent, R. C. (2012). *Overcoming Textbook Fatigue: 21st Century Tools to Revitalize Teaching and Learning*. ASCD. http://www.ascd.org/publications/books/113005/chapters/Background-Knowledge@-The-Glue-That-Makes-Learning-Stick.aspx

Marzano, R., J. (2004). *Building Background Knowledge for Academic Achievement: Research on What Works in Schools*. ASCD. http://www.ascd.org/publications/books/104017/chapters/The-Importance-of-Background-Knowledge.aspx

McNulty, A., & Lazarevic, B. (2012). Best Practices In Using Video Technology To Promote Second Language Acquisition. *Teaching English with Technology, 12*(3), 49-61.

Ragan, T., Boyce, M., Redwine, D., Savenye, W. C., & McMichael, J. (1993). Is multimedia worth it?: A review of the effectiveness of individualized multimedia instruction. Association for Educational Communications and Technology Convention, New Orleans, LA.

Saiman, K., Sinnatamby, S., Mustafa, L. M., Alias, N., & Siraj, S. (2013). Impact of Video on Learning in Students with Autism in Malaysia: Future Prospects. *Procedia - Social and Behavioral Sciences, 103*, 459-466. https://doi.org/10.1016/j.sbspro.2013.10.360

Shephard, K. (2003). Questioning, promoting and evaluating the use of streaming video to support student learning. *British Journal of Educational Technology, 34*(3), 295-308.

Syafrizal, S., Masrupi, M. & Mauludah, I. (2019). The Impact of Experiential Learning Method and Vocabulary Mastery Toward Indonesian Students' Reading Comprehension through Animation Video *7, 3*. https://doi.org/dx.doi.org/10.17478/jegys.531412

Wagener, D. (2006). Promoting independent learning skills using video on digital language laboratories. *Computer Assisted Language Learning, 19*(4-5), 279-286. https://doi.org/10.1080/09588220601043180

White, C., Easton, P., & Anderson, C. (2000). Students' Perceived Value of Video in a Multimedia Language Course. *Educational Media International, 37*(3), 167-175.