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TRENDS OF VIRTUAL REALITY IN ENGLISH LANGUAGE LEARNING

Yudi Wili Tama[1], Sri Sumarni[2*]
[12]Universitas Negeri Jakarta, Indonesia
*sri.sumarni@unj.ac.id

ABSTRACT

Virtual reality (VR) has become prevalent topic of English language learning. However, the use of virtual reality (VR) for English language learning still needs to be investigated considering that the learning process has entered the era of sustainability education. This study is a systematic literature review that focuses on investigating actual data from Google Scholar and Google Trends to identify emerging virtual reality trends for English language learning. Research data relies on the first relevant publication found in the database; 529 relevant Google Scholar papers have been found using content analysis. According to these statistics, virtual reality is a relatively recent and rapidly expanding worldwide issue that involves connections and writers from all over the world. In general, the recent significant increase in publications on "virtual reality in English language Learning" (as a source of knowledge) is consistent with the trend of increasing Internet searches on this topic (as a practical request). These findings can be used to be reference, promote, adapt and realign VR in English learning. This study only covers publication trends from 2004 to 2022, including publication frequency and sources.

Keywords: *English Language Learning, Systematic Literature Review, Virtual Reality, Global Trends*

1. INTRODUCTION

A new and incredibly promising technology for education and training is virtual reality (VR) (Parmaxi, 2020). Virtual reality studies in education are becoming more common, notably in language teaching and learning (Sulistyaningrum et al., 2022). Inefficiencies have emerged since the corona virus pandemic, particularly in the sectors of education and learning (Schleicher, 2020). Schools are required to do all of their activities online only for both students and staff due to the COVID-19 pandemic (Putri et al., 2020). To prevent the virus from spreading, numerous nations are also implementing preventative steps (WHO et al., 2020). Online learning is being embraced by educational institutions all over the world because it is believed to maintain the continuity of the educational process (Coman et al., 2020). Virtual reality (VR) can support online learning during the corona virus pandemic, demonstrating how educational media has advanced (Mado et al., 2022).

2. LITERATURE REVIEW

VR is a form of micro learning that focuses on one idea or topic for a brief amount of time (Horst & Dorner, 2019). Virtual reality (VR) is defined as the use of a simulated three-dimensional environment that allows users to look through or at objects from all angles (Saeed et al., 2017). Additionally, to produce a realistic and multimodal experience, virtual reality makes use of a range of techniques (including motion tracking and head-mounted displays, or HMDs) (Jensen & Konradsen, 2018). Virtual reality (VR), which was first introduced by John Lanier in the 1980s (Alizadeh, 2019), is still recognized as a novel learning medium today (Allcoat & von Mühlenen, 2018). Virtual reality (VR) is widely acknowledged to be a useful addition to online learning and a prime example of how educational media has developed (Kamińska et al., 2019). Because programmes for practical positional information sharing, such as salutations, entrance exams, food purchases, or conference calls, may be constructed; virtual reality is growing in popularity among those who study foreign languages (Peixoto et al., 2021).

The primary advantages employing VR are as follows: i) providing an enjoyable classroom atmosphere; ii) generating an immersive interface; iii) increasing students' encouragement for the education process; iv) improving students' analytical skills; and v) providing learners with resources to real-world learning materials (Sulistyaningrum et al., 2022).

There is some evidence that using virtual reality can improve the emotional and cognitive aspects of language learning. When it came to the emotional side of language acquisition, learners were discovered to enhance their independence, engagement, encouragement, and interests (Allcoat & von Mühlenen, 2018).

Several studies on the use of technology-assisted language acquisition have recently been published. VR has also piqued the interest of many in this field. Exploration, communication, and participation are features of VR technology (Wei et al., 2022). According to Tai et al (2020) students can participate in real-world learning activities in realistic, replicated environments thanks to virtual reality (VR) technology. This study examined how VR using mobile-rendered HMDs can affect vocabulary learning for EFL learners. Findings showed that compared to video watchers, VR gamers had better vocabulary learning and retention. The majority of the VR players felt that VR-mediated vocabulary learning was motivating and beneficial, and the VR app contextualized vocabulary learning by providing virtual environments with multimodal support and enhanced learner engagement. The video watchers' feedback revealed mixed feelings, with some feeling that the walkthrough video facilitated vocabulary learning, while others reported it lacked interactivity and their attention was easily distracted. As a result, virtual reality can help overcome the limitations of traditional language classes by providing learner-centered experiences such as exercising authority over the process of language learning (Alizadeh & Cowie, 2022). According to Tai et al (2020), EFL students believe that virtual reality technology is encouraging and empowering, according to a study. Students find virtual reality to be platform, easy access, with a pleasant functionality, and convenient given their limitations, the authors of the study say. For this study, they used an exploratory mixed method to explore the effect of VR on EFL writing performance. The study of Chien et al (2019) used a spherical video-based virtual reality (SVVR) environment to

situate students in authentic English-speaking contexts and used the peer assessment (PA) strategy to guide them to provide comments on peers' speaking performance and to make reflections on their own performance. Results showed more positive effects of the peer-assessment-based SVVR approach in terms of English speaking, learning motivation, and critical thinking skills, as well as reducing their English learning anxiety.

Although virtual worlds are becoming more widespread and resource, and VR invention remains in its early stages, only a handful of numerous investigations at the trend of VR for English learning, according to publications found through internet searches. The findings can be used to promote, develop, and implement virtual reality in the English field of education. Previous research strongly suggests that the recent increase in "microlearning" internet searches and the trend of "microlearning" publications are related. In an effort to close this gap, this study examines actual data from Google Scholar and Google Trends, which contain additional reliable publications in the database.

The preceding framework is employed in this article to assess the future trends of virtual reality in English language learning by analyzing genuine data from Google Scholar and Google Trends—information that includes the first notable publication investigated with in database. This study's framework is to first outline the research strategy, then present the findings. The researchers then consider the two distinct patterns of publications and internet searches. Finally, we discuss the findings as well as suggest decisions on the subject.

3. METHODS

3.1 Research Method

This research carried out a systematic literature review (SLR) to examine new potential trends in virtual reality in English language learning. The literature on media trends in English language learning was investigated methodically. Kitchenham & Chareters (2007) define SLR as just a process of identifying, assessing, and interpreting observational existing research to provide precise answers to specific research questions. Furthermore, the majority of this study's focus was on related articles and online searches.

Figure 1. Wahono (2020) Modified The Methodologies Used in the Current Study

Throughout the planning process, we recognized any need for a systematic study to examine how Virtual Reality (VR) is portrayed in the media as a global trend in English language learning. First, we obtained and carefully selected data from Google Trends and Google Scholar for the conducting step. The data was then derived, reviewed, and synthesized by the writers. The data is presented in the conclusive stage, the findings section.

Two sets of analyses were completed for this investigation. It began by investigating the prevalence of Virtual Reality (VR) in English language learning. The second study examined the rise in internet searches for Virtual Reality (VR) in English language learning. We examined the overall population of relevant sources of data using the findings of these two analyses. From 2000 to 2022, the main source of data for the publishing trend of virtual reality (VR) in English language learning was relevant literature evaluations from the Google Scholar database. Google Trends only includes search engine patterns from 2000. Analytical generalizations about patterns can be made by looking at all relevant data sources, whereas statistical generalizations about the study's sample are impossible. This research can offer a detailed comprehensive image of the trends of Virtual Reality (VR) in English language learning based on relevant papers (from Google Scholar) and web searches conducted between 2000 and 2022.

3.2 Publication Trends of Virtual Reality (VR) in English Language Learning

Data from Google Scholar was obtained in order to truly comprehend the trend of publication. Google Scholar's citation and abstract database contains information on nearly 529 publications from 40 publishers. It is a reliable database because the acceptable response that groups probably refresh their metadata in conformance with their pledges. We investigate publication patterns using the data in four directions: I The number of related studies over time; ii) The different types of publications; iii) Title-based word frequency analysis I; and iv) Abstract-based word frequency analysis II.

We selected these four points of view as they are typically amalgamated to create a comprehensive and varied understanding of publication trends. In this regard, the four solutions chosen provided the most straightforward way to access the various types of data generated by the database (Google). Because the method used in this study is easily reproducible, the results are translucent and reproducible. Reproducibility and transparency are two critical components of systematic literature review research, according to Fisch and Block (2018), Liao et al (2017), and Wang et al (2012) also used a similar methodology in their studies.

3.3 Internet Input Validation for Virtual Reality (VR) in English Language Learning

Before investigating publication trends, we used search engine analysis to gain an understanding of trends in knowledge-related evidence assertions. We conducted an internet search analysis to better understand how public interest in Virtual Media (VR) in English language learning has evolved over time. Policymakers may use the findings of the internet search study because they reflect consumer needs.

We employed Google Trends to assess its direction of online searches for Virtual Reality (VR) in English language learning in this research. A key phrase, according to Google, is a search term that an user can enter into Google to locate relevant data. Google Trends is a free and open-source internet tool. It presents the distribution in which specific search phrases are managed to enter over just a particular period of time. Google Trends, in other words, seems to be a website which then collects data on the most popular Google search terms.

Google Trends data has been extensively utilized by researchers to study user interests and behavior of a person in a wide range of fields. Ma (2022), for example, demonstrated how to forecast the spread of infectious diseases epidemics that used data from Google Trends ahead of the scheduled disease control and prevention but

also counteractive action. Furthermore, Grigoli et al (2018) demonstrated anything about using Google search engine data to calculate partial substitute metrics such as aggregate demand and labor force participation. Arslan et al (2020) used google trend to measure patterns in subject literacy across countries and over time. Durmuşoğlu (2017) demonstrated how to use Google Trends data to assess general populace of environmental problems.

Over the course of 19 years, Google Trends search terms, including keywords, were gathered for this study, December 2022. The time period chosen corresponds to the one used for the publication analysis carried out above using the first pertinent article discovered. The data received relates to the quest behavior of users of the Google search engine, specifically what these users are looking for over a certain period of time. Additionally, Google Trends' geographic location has been changed to "global", which means that user activity from all over the world, rather than just one particular area, is reflected in the data.

4. RESULTS & DISCUSSION

In this section, we would summarize the results of our investigation. The findings of the study provide a comprehensive picture of how the media portrays Virtual Reality (VR) in English language learning. The findings are related to online searches for Virtual Reality (VR) in English language learning, in addition to publishing trends in VR in English language learning.

4.1 Virtual Reality (VR) Publication Trends in English Language Learning

By searching Google Scholar for publications in education fields that use the term "Virtual Reality (VR) in English Language Learning", such as the article title, abstract, keywords, and author, we ultimately discovered 529 connected publications. In addition, Table 1 shows that less than 10 publications were published each year between 2000 and 2006. It started to increase by more than 10 publications between 2007 and 2009, although in 2010 publications stabilized at 10. Publications increased again in 2011 to 2011. 2013 although not significant, then surprisingly decreased to only 8 publications in 2014. From 2015 to 2022 publications related to virtual reality in English learning increased very significantly, namely 2017 with 35 publications, 2018 with 40 publications, 2019 with 47 publications which then decreased by three points to 43 publications in 2020. In the last two years, namely 2021 and 2022, publications on related themes have experienced a very significant increase with 58 and 70 publications.

Table 1. Based on Google Scholar, the Number of Related Publications on "Virtual Reality in English Language Learning" Over Time

Year	Number of Publications	Studies
2000	5	(Cohen, 2000; Liou, 2000a, 2000b; Milton & Garbi, 2000; Nitta et al., 2000)
2001	4	(Che, 2001; LaSpina, 2001; Peterson, 2001; Wilson, 2001)
2002	6	(Garbi, n.d.; Jung, 2002b, 2002a; S. Y. Kim, 2002; Schwienhorst, 2002a, 2002b)
2003	9	(Chapelle, 2003; Kiss & Kiss, 2003; Mwanza & Engeström, 2003; Pellens, 2003; Sarisakal & CEYLAN, 2003; Vidal et al., 2003; Virvou & Katsionis, 2003; Widdowson, 2003; X. Yang et al., 2003)
2004	9	(Asai et al., 2004; Csernoch, n.d.; Godwin-Jones, 2004; Huenerfauth, 2004a, 2004b; Murray, 2004; Papayianni, 2004; Vidal et al., 2004)
2005	3	(Huenerfauth, 2005; Y. Y. Lin et al., 2005; Seargeant, 2005)
2006	7	(Arnold, 2006; Parton, 2006; Patera et al., n.d.; Sekiguchi et al., 2006; Y. C. Shih, n.d.; Tardella et al., 2006; L. Wu & Ben-Canaan, 2006)
2007	15	(Gül et al., 2007; Kenning & Kenning, 2007; T. Y. Liu et al., 2007; Lotherington, 2007; Mayrath et al., 2007; McLeod, 2007; Murray, 2007; Pietroszek, 2007; Sanchez, 2007; Sherstyuk et al., 2007; Y. Shih et al., 2007; Thorsteinnson et al., 2007; Thorsteinsson & Page, 2007; Webb et al., 2007; L. Wu & Cao, 2007)
2008	12	(J. N. Anderson et al., 2008; T. A. F. Anderson et al., 2008; Ang & Zaphiris, 2008; Arvanitis & Panagiotidis, 2008; Derrington & ..., 2008; Diehl & Prins, 2008; Garcia-Ruiz et al., 2008; Hsieh & Lee, 2008; Nordin et al., 2008; Peterson, 2008; Powers et al., 2008; Y. C. Shih & Yang, 2008)

2009	16	(Ballou, 2009; Carter & Elseth, 2009; Fotouhi-Ghazvini et al., 2009; Hislope, 2009; Hundsberger, 2009; Kirkland, 2009; Kukulska-Hulme, 2009; Lau & Chen, 2009; T. Y. Liu, 2009; Neustaedter & Fedorovskaya, 2009; Schneider & Panichi, 2009; Segond & Parmentier, 2009; Tost & Economou, 2009; Turgut & İrgin, 2009; D. Zheng, Young, Brewer, et al., 2009; D. Zheng, Young, Wagner, et al., 2009)
2010	10	(Blasing, 2010; X. Jia et al., 2010; Jiang et al., 2010; T. Y. Liu et al., 2010; T. Y. Liu & Chu, 2010; Mullamaa, 2010; Nedeva & Dimova, 2010; Suh et al., 2010; Vickers, 2010; J. C. Yang et al., 2010)
2011	17	(Y. J. Chang et al., 2011; H. H. J. Chen & Yang, 2011; N. S. Chen et al., 2011; Chung, 2011; Godwin-Jones, 2011; Holden & Sykes, 2011; K. F. Hsiao & Rashvand, 2011; Ibanez et al., 2011; Kastoudi, 2011; S. H. Kim, 2011; H. J. Li & An, 2011; Ogata et al., 2011; Peterson, 2011; Son, 2011; SZABÓ, 2011; Thomas, 2011; Wehner et al., 2011)
2012	14	(Amoia et al., 2012; Angelopoulou et al., 2012; Balcikanli, 2012; Barreira et al., 2012; Beder, 2012; Chung, 2012; Ishizuka & Akama, 2012; Liou, 2012; Meyer, 2012; Miyosawa et al., 2012; Raoofi et al., 2012; Sadler, 2012; Sundqvist & Sylvén, 2012; Vate-U-Lan, 2012)
2013	12	(Armstrong et al., 2013; Botella et al., 2013; S. Chan et al., 2013; Dörner et al., 2013; Mahadzir & Phung, 2013; Parhizkar et al., 2013; Sharma et al., 2013; V. J. Soto, 2013; Thorsteinsson, 2013; Wasko, 2013; M. T. Yang et al., 2013; H. Zhang, 2013)
2014	8	(Y. L. Chen, 2014; Y. L. Chen et al., 2014; Ghasemi[1] & Javidan, 2014; Jee et al., 2014; Küçük et al., 2014; S. Li et al., 2014; Rahimi et al., 2014; X. Y. Zhang, 2014)
2015	11	(Boonbrahm et al., 2015; Farra et al., 2015; K. C. Li et al., 2015; T. J. Lin & Lan, 2015; Reinders et al., 2015; Repetto et al., 2015; Silva et al., 2015; Solak & Cakir, 2015; Solak & Erdem, 2015; Sorrentino et al., 2015; N. Zhang et al., 2015)
2016	18	(J. C. C. Chen, 2016; Y. L. Chen, 2016; Dalim et al., 2016; Ebert et al., 2016; Godwin-Jones, 2016; GÜNDOĞMUŞ et al., 2016; Gupta, 2016; T. C. Huang et al., 2016; Hwang et al., 2016; Y. Liu et al., 2016; Richardson, 2016; Rose & Bhuvaneswari, 2016; Safar et al., 2016; Santos et al., 2016; Scrivner et al., 2016; Solak & Cakır, 2016; Sytwu & Wang, 2016; Wójcik, 2016)
2017	35	(Al-Asheeri, 2017; Alizadeh et al., 2017; Alsowat, 2017; Biró et al., 2017; Bozdogan et al., 2017; Y. Chen et al., 2017; A. Cheng et al., 2017; K. H. Cheng, 2017; Dobrova et al., 2017; Hanafi et al., 2017; Hastings & Brunotte, 2017; I. Y. T. Hsiao et al., 2017; T. C. Hsu, 2017; JEONG, 2017; H. K. Kim & Kim, 2017; J. W. Kim et al., 2017; Koonsanit & Vate-U-Lan, 2017; Kruk, 2017; B. W. Lee et al., 2017; L. K. Lee et al., 2017; Lim et al., 2017; Lloyd et al., 2017;

		Madhumathi, 2017; Madini & Alshaikhi, 2017a, 2017b; Martínez et al., 2017; Minocha et al., 2017; Morrison, 2017; Nurtdinova, 2017; Ozkan, 2017; Renata, 2017; Sidi et al., 2017; Vedadi et al., 2017; D. Wu & Lo, 2017; Yi, 2017)
2018	40	(Berns et al., 2018; Blyth, 2018; Bonner & Reinders, 2018; I. C. Chen, 2018; Chew et al., 2018; Cowans, 2018; Craddock, 2018; Dolgunsöz et al., 2018; Ibrahim et al., 2018; Kaenchan, 2018; Kaplan-Rakowski & Wojdynski, 2018; Karageorgakis & Nisiforou, 2018; Kessler, 2018; Le & Dinh, 2018; L. Li, 2018; E. Liu et al., 2018; Madigan, 2018; N. A. A. Majid et al., 2018; S. N. A. Majid et al., 2018; Melchor-Couto, 2018; Merzifonluoğlu & Gonulal, 2018; Moralishvili, 2018; Papin, 2018; M. Park, 2018; Peeters & Dijkstra, 2018; Rafiq & Hashim, 2018; Sakamoto & Sakata, 2018; Sommerauer & Müller, 2018; Sykes, 2018; Taskiran, 2018; Teng et al., 2018; C. C. Tsai, 2018; Vázquez et al., 2018; Viktoria et al., 2018; Wilang & Soermphongsuwat, 2018; S. Yang & Mei, 2018; Y. L. Yeh & Lan, 2018; S. Zhang, 2018; Zhukova & Semenova, 2018; Зіноног et al., 2018)
2019		(Adnan, Ahmad, et al., 2019; Adnan, Karim, et al., 2019; Ahmad et al., 2019; Al-Gamdi, 2019; Alizadeh, 2019a; Asaad et al., 2019; Bensetti-Benbader & Brown, 2019; Bursali & Yilmaz, 2019; R. W. Chen & Chan, 2019; Y. Chen, 2019; Cheon, 2019; C. Chien, 2019; Hadid et al., 2019; Hao, 2019; Hoang & Nguyen, 2019; Howorth et al., 2019; T. C. Hsu, 2019; Hudaya & Sadikin, 2019; Huynh et al., 2019; Jamrus & Razali, 2019; Ji & Shin, 2019; T. Jia & Liu, 2019; Joseph, 2019; Karthiga, 2019; Khatoony, 2019; A. F. Lai et al., 2019; L. K. Lee, Chau, Chau, et al., 2019; L. K. Lee, Chau, Tsoi, et al., 2019; M. J. Lee et al., 2019; Legault et al., 2019; Nugraha et al., 2019; Nurhadi et al., 2019; Orlosky et al., 2019; Palmas et al., 2019; Peixoto et al., 2019; Pinto et al., 2019; Raju & Joshith, 2019; Rodríguez-Vizzuett et al., 2019; Scrivner et al., 2019; Taskiran, 2019; Topsakal & Topsakal, 2019; Tulgar, 2019; Vedadi et al., 2019; Wilang, 2019; Yoke et al., 2019; Zapata-Paulini et al., 2019; X. Zhang, 2019)
2020	43	(Adnan et al., 2020; Ahmet & Cavas, 2020; Aladin et al., 2020; Alemi & Khatoony, 2020; Alfadil, 2020; Arunsirot, 2020; Ashley-Welbeck & Vlachopoulos, 2020; Azar & Tan, 2020; Buchner & Weißenböck, 2020; Y. S. Chang et al., 2020; J. C. C. Chen & Kent, 2020; Y. L. Chen & Hsu, 2020; S. Y. Chien et al., 2020; Dalim et al., 2020; Dan et al., 2020; Derlina et al., 2020; Desierto et al., 2020; Draxler et al., 2020; Eisenlauer, 2020; Fan et al., 2020; Hinojo-Lucena et al., 2020; H. L. Huang et al., 2020; X. Huang et al., 2020; Jalaluddin et al., 2020; Jeong et al., 2020; Junior & Bodzin, 2020; Lan, 2020; Lege et al., 2020; X. Li et al., 2020;

		Monteiro & Pfeiffer, 2020; Monteiro & Ribeiro, 2020; Ondarra et al., 2020; Parmaxi & Demetriou, 2020; Pereira et al., 2020; Putra et al., 2020; Quandt, 2020; Redondo et al., 2020; J. B. Soto et al., 2020; C. C. Tsai, 2020; Urueta & Ogi, 2020; Xiao-Dong & Hong-Hui, 2020; F. C. O. Yang et al., 2020; D. Zhang et al., 2020)
2021	58	(Aldossari & Alsuhaibani, 2021; Alemi & Khatooni, 2021; Bacca-Acosta et al., 2021; Berns, 2021; Binhomran & Altalhab, 2021; J. Y. Cai et al., 2021; Chandra et al., 2021; Cho & Kim, 2021; Costuchen et al., 2021; Cui et al., 2021; T. Dhimolea et al., 2021; Dilyorjon, 2021; Forrester & Chan, 2021; Frazier et al., 2021; Fuhrman et al., 2021; Hein et al., 2021; X. Huang et al., 2021; Isaeva et al., 2021; Jacobson et al., 2021; Jamrus & Razali, 2021; Jeong & Jeong, 2021; Jin, 2021; Khoshnevisan & Park, 2021; Klimova, 2021; Korosidou & Bratitsis, 2021; Kruk, 2021; J. Y. Lai & Chang, 2021; Lau & Wen, 2021; K. C. Li & Wong, 2021; X. Li & Jiang, 2021; X. Li & Xie, 2021; V. Lin et al., 2021; Y. J. Lin & Wang, 2021; Y. Liu et al., 2021; L. Ma, 2021; S. N. A. Majid & Salam, 2021; Nicolaidou et al., 2021; Pack & Barrett, 2021; Pan et al., 2021; Panagiotidis, 2021a, 2021b; Rosa-Dávila et al., 2021; Rozi et al., 2021; Santosa et al., 2021; T. Y. Tai & Chen, 2021; Tanasijević & Janković, 2021; Tsekhmister et al., 2021; Utami et al., 2021; C. Wang et al., 2021; Z. Wang et al., 2021; M. H. Wu, 2021; Xue & Wang, 2021; G. Yang et al., 2021; Yuan & Li, 2021; D. Zhang & Pérez-Paredes, 2021; Y. Zhang, 2021; Ziyatdinova & Bezrukov, 2021)
2022	70	(Alamsyah et al., 2022; Alwafi et al., 2022; Amelina et al., 2022; Bahari, 2022; Bao, 2022; Baralt et al., 2022; Belda-Medina, 2022; Y. Cai et al., 2022; V. Chan, 2022; B. Chen et al., 2022; H. L. Chen & Liao, 2022; M. P. Chen et al., 2022; Y. L. Chen et al., 2022; Choi, 2022; Cowie & Alizadeh, 2022; DeWitt et al., 2022; T. K. Dhimolea et al., 2022; Dukalskaya & Tabueva, 2022; Ebadi & Ashrafabadi, 2022; Ebadi & Ebadijalal, 2022; Gayevska & Kravtsov, 2022; Ghoul & Othman, 2022; Gong & Wang, 2022; Gruber & Kaplan-Rakowski, 2022a, 2022b; Halimah et al., 2022; Hashim et al., 2022; Hoang et al., 2022; C. C. Hsu et al., 2022; Jing et al., 2022; Khodabandeh, 2022; J. Kim et al., 2022; Kondratiuk et al., 2022; J. Lee, 2022; Y. Li et al., 2022; V. Lin et al., 2022; Y. J. Lin & Wang, 2022; Luo, 2022; X. Ma, 2022; Marrahí-Gómez & ..., 2022; Okumuş & Savaş, 2022; Opu et al., 2022; Özçelik et al., 2022; ÖZÇELİK et al., 2022; H. Park, 2022; Pataquiva & Klímová, 2022; Rapti et al., 2022; Salmee & Majid, 2022; Syamsinar, 2022; T. Y. Tai, 2022; T. Y. Tai et al., 2022; S. C. Tsai, 2022; Tulgar et al., 2022; TULGAR et al., 2022; Ustun et al., 2022; Uygun & Girgin, 2022; X. Wang, 2022; Y. Wang & Mughaid, 2022; Wedyan et al., 2022; J. G.

		Wu et al., 2022; W. Wu & Qiu, 2022; Y. H. S. Wu & Hung, 2022; Xie et al., 2022; H. Yang et al., 2022; H. C. Yeh et al., 2022; Yilmaz et al., 2022; Yu et al., 2022; Yulian, 2022; Zhao & Liu, 2022; C. Zheng et al., 2022)

4.2 Types of Publication Sources

Table 2 displays the sources of different types of publications from Google Scholar. Books, dissertations, peer-review, reference-entry, book-chapter, journal-article, posted-content, monograph, proceedings, proceedings-article, and others are among the source types of publications retrieved from Google Scholar, according to Table 2.

Table 2. Based on Google Scholar, The Number of Related Publications on "Virtual Reality in English Language Learning" Over Time

Source of Publications	Total
Book	2
Dissertation	8
Peer-Review	10
Reference-Entry	13
Book-Chapter	21
Journal Article	339
Posted-Content	8
Monograph	7
Proceedings	36
Dataset	7
Proceeding-Article	35
Standard	8
Other	8
Grand Total	**529**

The main types of publication sources related to "Virtual reality in English Learning" are journal articles. Google Scholar offers filtering options for up to 13 different categories. Table 2 shows that journal articles are the most frequently published source, with 339 publications. It also shows how papers with the keyword "Virtual reality in English Learning" find out among the results of the research database.

4.3 Analysis of Term Frequency I: Titles-based

Figure 2 depicts the research scope depending on 529 related studies discovered via a Google Scholar search. The data was analyzed using the "VOSviewer" application system. The number of studies increases as the colors in Figure 2 become more intense.

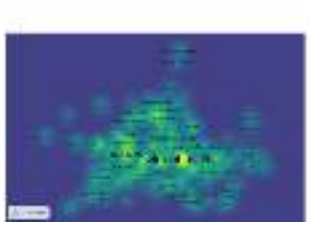

Figure 2. Topic Area Visualization with VOS Viewer Using Density Visualization

To complement the portrayal in Figure 2, Table 3 lists the top ten phrases that appear in titles the most, arranged by precise number. Table 3 reveals that among the papers taken from Google Scholar, the phrase "Virtual Reality in English Language Learning" appears in titles the most frequently. According to Figure 2, the word "Virtual Reality" has the highest concentration of yellow color. Then, more terms are added, such as "Education, Technology, and Application," which is similarly colored in a brighter yellow than terms that are used less frequently.

Table 3. Analysis of Term Frequency I: Based on the Titles Found on Google Scholar

No	Terms	Occurencies
1	Virtual Reality	105
2	Education	89
3	Technology	85
4	Application	50
5	Research	43
6	Learning	40
7	Effectiveness	39
8	Meta Analysis	39
9	Environment	35
10	English Language	10

4.4 Term Frequency Analysis II: On the Basis of Abstracts

Figure 3 displays a breadth of the inquiry, which was concentrated on the summaries of 529 linked publications located through Google Scholar. The purpose of an abstract is to summarize an article. The assessed-data was found by using the system of "VOSviewer" application. The colors of figure 3 appear to indicate more research as they become stronger.

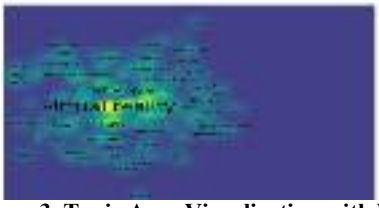

Figure 3. Topic Area Visualization with VOSviewer Using Density Visualization

Table 4 lists the most popular ten terms found in abstracts that correspond to the exact number of the visualization in Figure 3. The illustration of terms of top tree in Table 4 are Virtual Reality, Student, and Language which can be observed in Figure 3 with the most highly focused yellow. To conclude, the terms mentioned in Table 4 are the trends of related publications based on the abstracts.

Table 4. Term Frequency Analysis II: on The Basis of Google Scholar Abstracts

No	Terms	Occurencies
1	Virtual Reality	248
2	Student	130
3	Language	127
4	Technology	120
5	Application	115
6	Virtual Environment	94
7	Language Learner	83
8	User	74
9	Work	58
10	Form	57

4.5 Internet Input Validation for Virtual Reality in English Language Learning

Figure 4 depicts the "search volume indices" for the phrases "Virtual Reality in English Learning" from January 1, 2004 to December 20, 2022. In these diagrams, time is represented by the horizontal axis. The "search volume index" is the number that appears on the straight line. The index displays search interest relative to the chart's peak period, which runs from January 1, 2004, to December 2022. Scores range from 0 to 100, with 100 representing the term's maximum level of popularity.

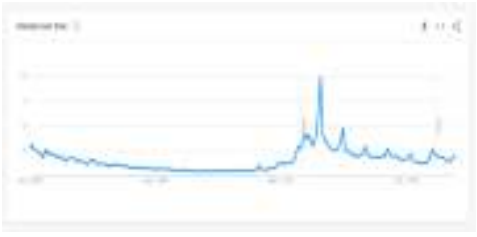

Figure 4. The Search Trend for the Term "Virtual Reality in English Learning" from January 2004 to December 2022

The heading of a section should be in Times New Roman 12-point bold in all-capitals aligned left with an additional 6-points of space above the section head. Sections and subsequent sub- sections should be numbered and aligned left. For a section head and a subsection head together (such as Section 3 and subsection 3.1), use no additional space above the subsection head.

Figure 4 shows that the year 2016 saw the highest amount of "Virtual Reality in English Language Learning" search activity. Then, from 2007 to 2014, it stayed relatively constant at a reduced level before beginning to rise in 2015 and continuing to this day, though not to the same extent as search activity from 2007 to 2014. Therefore, it makes sense that virtual reality is a trend that is constantly expanding on a global scale, particularly in the field of English learning research.

We consequently believe that since 2015, there has been an increased trend in the search structure for "Virtual Reality in English Language Learning." Figure 3 shows the rising interest in the study of virtual reality in English language learning.

5. CONCLUSION

This study has demonstrated that Virtual Reality in English Language Learning is continuing to emerge as a global trend, particularly in studies of English learning. The studies between 2000 and 2022 were located through Google Scholar. The study found that the majority of Google's source types for publications are journal articles. We discovered 529 relevant Google Scholar publications through content analysis. According to research, virtual reality in English language learning is an extremely cutting-edge, global, and international topic that collaborates with authors from all over the world. In general, the recent surge in Internet searches for "Virtual Reality in English Language Learning" (as a result of increased demand) is commensurate with the rising number of publications on "Virtual Reality in English Language Learning" (as a collection of information).

6. REFERENCES

Alizadeh, M. (2019). Virtual reality in the language classroom: theory and practice. *Call-Ej*, *20*(September), 21–30.

Alizadeh, M., & Cowie, N. (2022). Language learning and virtual reality: A scoping review. *ASCILITE Publications*, *13*, e22258. https://doi.org/10.14742/apubs.2022.258

Allcoat, D., & von Mühlenen, A. (2018). Learning in virtual reality: Effects on performance, emotion and engagement. *Research in Learning Technology*, *26*(1), 1–13. https://doi.org/10.25304/rlt.v26.2140

Arslan, S., Tiwari, M., & Piech, C. (2020). *Using Google search trends to estimate global patterns in learning*. In Proceeding of ACM Conference on Learning. http://dx.doi.org/10.1145/3386527.3405913

Chien, S.Y., Hwang, G.-J., & Jong, M. (2019). Effects of peer assessment within the context of spherical video-based virtual reality on EFL students' English-Speaking performance and learning perceptions. *Computers & Education*, *146*(12), 103751. https://doi.org/10.1016/j.compedu.2019.103751

Coman, C., Țîru, L. G., Meseșan-Schmitz, L., Stanciu, C., & Bularca, M. C. (2020). Online Teaching and Learning in Higher Education during the Coronavirus Pandemic: Students' Perspective. *Sustainability, 12*(24), 56-68. https://doi.org/10.3390/su122410367

Durmuşoğlu, Z. D. U. (2017). Using Google trends data to assess public understanding on the environmental risks. *Human and Ecological Risk Assessment: An International Journal*, *23*(8), 1968–1977. https://doi.org/10.1080/10807039.2017.1350566

Fisch, C., & Block, J. (2018). Six tips for your (systematic) literature review in business and management research. *Management Review Quarterly*, *68*(2), 103–106. https://doi.org/10.1007/s11301-018-0142-x

Grigoli, F., Koczan, Z., & Tapalova, P. (2018). *Drivers of labor force participation in advanced economies : macro and micro evidence drivers of labor force participation in advanced economies: Macro and micro evidence. IMF Working Papers 18* (150), 1-13. DOI:10.5089/9781484361528.001

Horst, R., & Dorner, R. (2019). Mining Virtual Reality nuggets: A Pattern-based approach for creating virtual reality content based on microlearning methodology. *TALE 2019 - 2019 IEEE International Conference on Engineering, Technology and Education*, *December*. https://doi.org/10.1109/TALE48000.2019.9225867

Jensen, L., & Konradsen, F. (2018). A review of the use of virtual reality head-mounted displays in education and training. *Education and Information Technologies*, *23*, 1–15. https://doi.org/10.1007/s10639-017-9676-0

Kamińska, D., Sapiński, T., Wiak, S., Tikk, T., Haamer, R. E., Avots, E., Helmi, A., Ozcinar, C., & Anbarjafari, G. (2019). Virtual Reality and its applications in education: survey. *Information, 10*(10), 223-236.

Kitchenham, B., & Charters, S. M. (2007). *Guidelines for performing Systematic Literature Reviews in Software Engineering Guidelines for performing Systematic Literature Reviews in Software Engineering, Software Engineering Group School of Computer Science and Ma*. *January*. Technical Report, no. EBSE-2007-01.

Liao, Y., Deschamps, F., Loures, E. de F. R., & Ramos, L. F. P. (2017). Past, present and future of Industry 4.0 - a systematic literature review and research agenda proposal. *International Journal of Production Research*, *55*(12), 3609–3629. https://doi.org/10.1080/00207543.2017.1308576

Ma, S. (2022). Using internet search data to forecast COVID-19 trends. *A Systematic Review*. 1(2), 210-227.

Mado, M., Fauville, G., Jun, H., Most, E., Strang, C., & Bailenson, J. N. (2022). Accessibility of educational virtual reality for children during the COVID-19 pandemic. *Technology, Mind, and Behavior*, *3*(1). https://doi.org/10.1037/tmb0000066

Parmaxi, A. (2020). Virtual reality in language learning: a systematic review and implications for research and practice. *Interactive Learning Environments, 31*(3),1-13.

Peixoto, B., Pinto, R., Melo, M., Cabral, L., & Bessa, M. (2021). Immersive virtual reality for foreign language education: A PRISMA systematic review. *IEEE Access*, *9*(May), 48952–48962. https://doi.org/10.1109/ACCESS.2021.3068858

Putri, R. S., Purwanto, A., Pramono, R., Asbari, M., Wijayanti, L. M., & Hyun, C. C. (2020). Impact of the COVID-19 pandemic on online home learning: An explorative study of primary schools in Indonesia. *International Journal of Advanced Science and Technology*, *29*(5), 4809–4818.

Saeed, A., Foaud D, L., & Fattouh I, L. (2017). Environments and system types of virtual reality technology in STEM: A survey. *International Journal of Advanced Computer Science and Applications*, *8*(6), 77–89.

Schleicher, A. (2020). The impact of COVID-19 on education: Insights from education at a glance 2020. *OECD Journal: Economic Studies*, 1–31. Available at https://tinyurl.com/53w3pf5n

Sulistyaningrum, S. D., Putri, R. S., Herawati, A., & Irianto, S. (2022). Trends of virtual reality for learning empirical evidence from different fields. *Journal of Education and Learning (EduLearn)*, *16*(4), 531–541. https://doi.org/10.11591/edulearn.v16i4.20648

Tai, T.Y., Chen, H., & Todd, G. (2020). The impact of a virtual reality app on adolescent EFL learners' vocabulary learning. *Computer Assisted Language Learning*, *35*, 1–26. https://doi.org/10.1080/09588221.2020.1752735

Wahono, R. S. (2020). Systematic literature review (slr): a systematic literature review of software defect prediction: research trends, datasets, methods and frameworks. *Journal of Software Engineering,. 1* (1), 18-25.

Wang, C., Wang, X., Gong, G., Ben, Q., Qiu, W., Chen, Y., Li, G., & Wang, L. (2012). Increased risk of hepatocellular carcinoma in patients with diabetes mellitus: A systematic review and meta-analysis of cohort studies. *International Journal of Cancer*, *130*(7), 1639–1648. https://doi.org/10.1002/IJC.26165

Wei, X., Jin, X., & Fan, M. (2022). Communication in immersive social Virtual Reality: A systematic review of 10 years' studies. In *Chinese CHI '22: The Tenth International Symposium of Chinese CHI (Chinese CHI 2022), October 22â•fiOctober 23, 2022, Guangzhou, China 1(1)*. Association for Computing Machinery. http://arxiv.org/abs/2210.01365

WHO, IFRC, & Unicef. (2020). Key messages and actions for prevention and control in schools. *Key Messages and Actions for COVID-19 Prevention and Control in Schools*,

March, 13. Available online at https://bit.ly/41K46PX