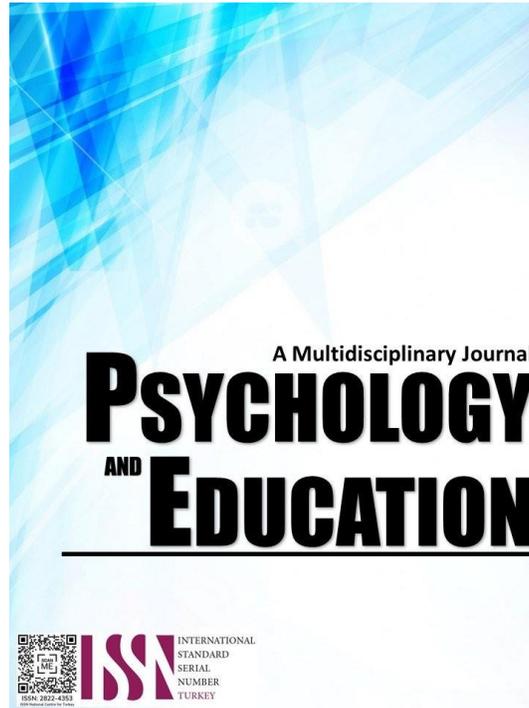


MULTIMODAL LANGUAGE TEACHING AND LANGUAGE SKILLS DEVELOPMENT WITH AI AND VR INTEGRATION: A SYSTEMATIC LITERATURE REVIEW



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Multimodal Language Teaching and Language Skills Development with AI and VR Integration: A Systematic Literature Review

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Abstract

Language teaching and learning has evolved across time, and this evolution integrated technology-based adjustments and modifications with emergent technologies like artificial intelligence (AI) where computer systems are capable of performing multiple and complex tasks that simulates human learning and cognition and virtual reality (VR) where users can simulate various 3D environments, manipulate objects, and interact with surroundings imitating the real world through the approaches, roles, resources language teachers used. Thus, this paper explored the integration of multimodal language teaching with AI and VR to enhance language skills development through a systematic literature review. Through careful review, recent literature noted positive consensus of various educators of English language teaching and learning towards the use of AI and VR in multimodal language teaching. The review revealed that the receptive language skills (i.e. language skills used to receive, process, digest, and understand information) of listening, reading, and viewing are enhanced in instances where AI and VR is used in the context of multimodal language teaching. Moreover, the same is true for the productive language skills (i.e. language skills that involve the use of the language to express oneself meaningfully) of speaking, writing, and representing can be developed through AI-based and/or VR-based multimodal language teaching in the overall goal and context of ELT and ELL. However, some of the studies reviewed also presented barriers and negative feedback on the integration of AI and VR within ELT and ELL. By identifying gaps in current research and providing recommendations for future studies, this paper contributes to the understanding of how multimodal language teaching, enhanced by AI and VR, that will allow educators, researchers, curriculum developers, teaching-learning material designers and developers, and administrative language policymakers to integrate innovative technologies and enhance transformative language learning delivery to every language learner.

Keywords: *artificial intelligence, language skills development, multimodal language teaching, systematic literature review, virtual reality*

Introduction

Language learning and teaching is crucial in the development of individual and collective human existence. Grammar-Translation Method focused on traditional grammar of the Greek and Latin languages through memorization, where reading and writing skills are given more focus than on listening on speaking. The Natural Method, on the other hand, reversed the earlier approach, with speaking and listening given emphasis as key language skills and target language is used without allowing any translation from the first language, and vocabulary is learned contextually. The Audio-lingual Approach integrated applied linguistics, language teaching, and behavioural psychology through stimulus-response, operant conditioning, and reinforcement, where error-free language learning is the key goal through tape recordings and language laboratory pattern drills. In later years, the emergence and adoption of communicative language teaching (CLT), task-based language teaching (TBLT) to use language meaningfully through effective communicative instances and through role-dependent tasks (Jebahi, 2022).

While some of these language teaching approach apply innovative features that lean on trends and technology of their day, these previous language teaching approaches incorporate limited or unimodal means to access the target language in the teaching-learning process. A focus on one mode of teaching has proven to be ineffective for modern-day language learning in terms of engagement and comprehension, as that of the case of Huang, et. al. (2022), where students learning phrases had still been under unimodal language teaching (on paper/textual mode) achieved subpar results. Such a case does not correspond with the notion that students of this age have different means and styles of learning as well as multiple intelligences. Thus, Multimodal Language Teaching rose to prominence to try to cater to the needs of 21st century language learners. Multimodal language teaching involves the teaching of a language using different modes to enhance content delivery as well as student learning (Yang, 2022) and meaning-making. Guo (2023) laid out five modality related to the human senses and language skills: auditory, visual, gestural, kinesthetic, and text modalities. One can see this in today's classroom where books are not the only means of educational technology and learning resource, but also videos they encounter in various social media sites or streaming platforms and software/applications relevant with language acquisition and learning like DuoLingo and Babbel.

The approach of Multimodal language teaching towards language learning/teaching can be deemed to be holistic, as it aims to address the cognitive, affective, and psycho-motor domains of learning. It also addresses the various learning preference/styles of students and caters to every intelligence. Furthermore, this targets the six language skills language learners ought to develop: the language skill pairs of listening-speaking, reading-writing, and viewing-representing. This enhancement in language learning and teaching is complemented with the use of multimedia and ICT as students employ their socio-semiotic resources (Magnusson and Godhe, 2019)

in order to make sense of materials, content, and context given to them. As such, books are now augmented with realia and technology. Computer-Assisted Language Learning (CALL) eventually evolved in the 21st century artificial intelligence (AI), and virtual reality (VR). These two computer connect language learning and teaching to the 21st century language learning pedagogies and classrooms.

To date, research is now expanding in the exploration of Multimodal language teaching/learning and the integration of CALL/AI/VR to language teaching and the development of language skills. However, while most papers and studies have looked into the survey of AI /VR connections and integration in language skills development, literature gaps present a lack of incorporation of AI and VR into the concept of multimodal language teaching. As AI and VR continue to develop into more complex system and expand and make their way into the 21st century classroom, the connection to these technological advancement and its observed/measured use in the classroom by means of multimodal language teaching must be explored as different potentials, benefits, challenges, and rooms for innovation could be explored that will lead to students' improved language skills. Thus, this paper aims to investigate what current literature mentions concerning multimodal language teaching and the integration of ICT in language teaching and language skills development.

Research Questions

Specifically, this paper aimed to address the following questions:

1. How is AI and VR described in the context of multimodal language teaching inside the language classroom?
2. What benefits in language skills development have been observed/discovered when AI and VR is integrated in multimodal language teaching?
3. What challenges have been observed among learners' language skills development during the integration of AI and VR in their multimodal language learning?

Methodology

Research Design

This study used a descriptive qualitative design. The descriptive design "answers exploratory qualitative questions that do not fit into the framework of a more traditional design", where it has also been regarded as interpretive (National University California, 2023). This design is suited for qualitative studies where detailed exploration of themes and patterns can be identified across multiple studies. Furthermore, descriptive qualitative design makes use of non-statistical analysis, thus leading to a better understanding of an occurrence/practice by means of analyzing and examining context-dependent experiences and evidences This ensures clarity and better meaning-making of qualitative data.

Sources

Using purposive sampling technique, several sources of data have been utilized in this study. Studies from the time span of 2020 to 2024 have been utilized in this study. Keywords such as "multimodal language teaching and use of AI" and "multimodal language teaching and use of virtual reality" have been considered to filter the selection of papers through a run through in Google Search. Due to limitations in extracting relevant literature, only five studies from peer-reviewing publications have been chosen for each of the two categories.

Procedure

Xiao and Watson (2019), in Davison (n.d.), outlined the steps in the administration of the systematic literature review. (Davison , n.d.). The flow of implementing the systematic literature review is divided into three main stages: (1) planning the review, (2) conducting the review, and (3) reporting the review. The first stage is concerned with the identification and formulation of the research problem, where in this study are reports of relevant literature concerning integration of AI and VR in multimodal language teaching for language skills development. The second stage is concerned with the actual review, where a researcher searches relevant literature, filters the materials and checks the quality of each of the selected materials, extracts the essential topics, and analyses and synthesizes data needed by the researcher. The last stage is concerned with the reporting of the findings, and in this study, the comparison of key points unique to each variable.

Data Analysis

For qualitative data analysis, thematic analysis has been used. Thematic analysis is regarded to be appropriate in the "uncovering" and "demystifying" of various relevant/target interpretations. Braun and Clarke (2006) conceptualized a model for thematic analysis, which includes six phases towards analysis and interpretation.

The first phase (data familiarization) involves reading and re-reading the data for greater exposure and understanding of the source material. The second phase (initial coding) uses either either a manually-conducted or software-assisted method in identifying, organizing, and labeling sections of data. Initial coding for this study has been manually conducted to capture nuances from the studies that softwares may not identify. The third phase (theme generating) is concerned with the grouping of similar codes to come up with broader patterns and related ideas. The fourth phase (themes reviewing) involves linking located/identified themes with data from the source material for them to be meaningful and well-defined. The emerging themes identified in the analysis will be essential in



describing the use of AI and VR through multimodal language teaching for language skills development, in identifying the benefits and challenges of using AI and VR in multimodal language teaching, and how AI and VR impacts language skills development through multimodal language teaching. The fifth phase (defining and naming themes) involves developing descriptions for each theme, “capturing the essence” of the generated themes, and generalizing them into categories that are consistent, coherence, and connected with their data based from the source material. The sixth phase (reporting) shall be the stage where the themes are presented and reported in line with the research questions through the identification, analysis, and summa of how incorporating AI and VR in multimodal language teaching influences language skills development among learners.

Results and Discussion

Table 1.

Relevant Studies In Multimodal Approaches In Language Teaching And Ai					
No.	Author's Surname and Year of Publication	Research Title	Research Focus	Research Method	Research Findings/Results
	Lin., et. al. (2024)	Integrating generative AI into digital multimodal composition: A study of multicultural second-language classrooms	Efficiency of generative AI tools in DMC tasks within a multicultural L2 Chinese setting using the IDEA framework	mixed-method approach	POE is perceived as useful in generating sentences, refining lines of poetry, translating for improvement of comprehension, and creating imagery to produce poetry. While students used AI in their composition, they integrated their own perspectives in their writing as a result of both self and peer assessment. Textual mode of expression was not the only evident mode, but also visual and auditory, which boosted students' motivation. Generative AI is highlighted for organizing content and enhancing structure of the composition. POE is an effective tool for revision and editing text, despite generated text from AI has erroneous contents.
	Fang and Deng (2024)	Using Generative AI to facilitate digital multimodal composing in EFL learning	Promotion of how Generative AI can improve student writing through digital multimodal composing (DMC) in the context of EFL	quantitative - experimental	The paper laid out background information and framework: firstly, on the GenAI applications of Natural Language Generation, Image Synthesis, and Video Generation. The proposal adopted a social semiotic multimodal approach from Kress (2003, 2010) where the transformation and transduction stages are vital in DMC. Fang and Deng also adopted Systemic Functional Theory and Design Thinking within their pedagogical framework, that has students use their technical domain, creative domain, and critical domain.
	Jiang (2024)	When generative artificial intelligence meets multimodal composition: Rethinking the composition process through an AI-assisted design project	Efficiency of generative AI tools in DMC tasks among undergraduate students using DALL-E and Firefly	qualitative - case studies and focus group discussion	DALL-E proved efficient in the conceptualization and visualization of ideas, but has setbacks on the realness and consistencies of the generated images. Firefly maintained usefulness, albeit for smaller tasks only. Respondents showed concern for potential limitations and overuse of generative AI. Some of the contents were observed to have cluttered, irrelevant, incoherent, and unclear details, which may “constrain creativity”.



Simonsen and Bédi (2023)	Using generative AI tools and LARA to create multimodal language learning resources for L2 Icelandic	Use of generative AI (ChatGPT 4.1) to create illustrated reading materials for L2 Icelandic users proofread by human users	quantitative - experimental & survey	<p>Generative AI is seen as an alternative solution to "wicked design problems", such that it streamlines the work process.</p> <p>Overall, generative AI has been viewed by this paper to foster creativity among undergraduate writing students.</p> <p>Simonsen and Bédi recorded improvement of reading comprehension among tertiary/secondary students and primary pupils (36 out of 40 or 70%)</p> <p>The paper showed that generative AI proved to have "practical benefits" for creating unique language learning materials for L2 Icelandic</p> <p>Some significant errors in the use of generative AI were grammatical errors and contextual inaccuracies</p>
Zhang, et. al. (2022)	Effect of Multimodal Teaching on Language Comprehension Ability under the Background of Artificial Intelligence	Utilization of three-phased data gathering procedure: (1) oral test pretest, (2) us multimodal oral teaching implementation, (3) and oral test posttest for a Chinese collegiate context	quantitative - experimental & survey	<p>Results indicated that while most students did not prefer reading and writing (67.35%), the use of AI and the ecological teaching method significantly improved students' attitudes and abilities towards oral/speaking skills</p> <p>This paper found out that the ecological teaching method is "conducive to the students' performance in English"</p> <p>The paper further noted that the application of AI towards Multimodal Teaching on Language is advantageous for students</p>
Lai (2024)	Enhancing multimodal output in CLIL education: The impact of VR games on fourth-grade students' English poster designs and presentations in Taiwan	Investigation of using VR games in enhancing fourth-grade Taiwanese students' writing and speaking skills in a Science class utilizing the content and language integrated learning (CLIL)	quasi-experimental study - comparative case study design Control Group (CG) used PowerPoint (PPT)-based games that displayed English vocabulary alongside Chinese translations Experiemental Group (EG) used VR-based games developed through CoSpaces EDu ProEach VR, with an implemented buddy system	<p>Generally, result show that the EG (i.e. students who used VR-based games in learning science lessons) did better than the CG (i.e. students who used PPT-based games in learning science lessons).</p> <p>Through the 4Cs of the CLIL, the EG did better in their poster design and oral presentation, that they displayed and used higher-order thinking skills, did better in vocabulary use and sentence complexity in their Science lesson.</p> <p>Overall, the EG showed "greater depth, accuracy, and relevance" of concepts in their Science lesson and displayed "better integration of textual and graphical knowledge of language use"</p>
Demai Jang, et. al. (2024)	Virtual reality (VR) and its acceptance among English language teachers	Malaysian English Language teachers from selected districts of Sarawak state	quantitative research approach - cross-sectional survey method A 34-question survey consisted of four sections: A (profiling), B (previous technology experience), C (perceptions on VR technology use in the classroom), and D	<p>The paper noted that Malaysian teachers are still in the learning phase in the VR technology.</p> <p>The paper revealed that Malaysia ELT teachers viewed VR integration to English language learning as a potential means of enhancement of students' academic performance which can also encourages active participation in related classroom activities</p>

Guo and Lan (2023)	Virtual world-supported contextualized multimodal EFL learning at a library	Integration of VR into storybook reading among Grades 4-6 pupils in several Taiwanese elementary schools Examination of role and effects of VR in both intrinsic and extrinsic motivation and learning anxiety in language learning	(integration of VR technology) mixed methods study - action research Student planning of VR environment construction utilized written texts (from brainstorming), represented through student sketches, and visualized through use of Omni-Immersion Vision (OIV) to use and manipulate 3D objects Researchers used Reading Tests based from two selected reading texts, a Likert Scale questionnaire, and a qualitative analysis to assess and analyse skill improvement quantitative - experimental VR system employed VR Tech, Unity 3D, and 3D Max for its design VR system is complemented by a VR resource library and the VR classroom	The study also mentioned that VR technology integration in English language learning and teaching can address and cater to different levels of student learning, abilities, and competencies Group 2 (experimental group who integrated use of VR with picture book) improved reading skills in use of VR Group 2 had both increased intrinsic and extrinsic motivation, lowered anxiety and developed enjoyment, and positive attitude on the presence of technology in the reading process Students relied less on written and drawn/sketched plans for their VR environments Multimodal teaching-learning process incorporated both L1 and L2, and used both linguistic and non-linguistic elements of their linguistic repertoires student use of their 3D spatial skills is achieved through “purposeful vocabulary” in order to give instructions VR system is composed of several factors: (1) “interactive” interaction, showing the dynamic nature of the system, (2) “imaginative” imagination, or the active integration of higher-order thinking skills to the user experience, and (3) immersion, or the sense of reality of the system As college students immersed in the VR system by interacting with several scenes, VR system assesses student competency through speech recognition and evaluation Test results after the testing of the VR system showed that students improved in their English language skills of listening and speaking (oral fluency and English mastery) Results indicated that participants who used VR-assisted multimodal text performed better in the immediate post-test and delayed post-test compared to the other EG and the CG Results indicated that participants who used VR-assisted multimodal text received highest scores in both post-tests for reading comprehension. The study indicated significant difference of total reading test score between VR group and paper group. The study also indicated significant difference of total reading test score between VR group and paper group Further data showed that relationship between input modality and levels of cognitive load post-treatment were similar for all in all three groups VR-assisted multimodal text group did better compared to the other two
Liu (2022)	The design and construction of college English multi-modal assisted teaching system based on virtual classroom	Transformation/innovation of English Language Teaching/Learning from traditional to the interactive through the Virtual World in the Chinese tertiary setting	VR system employed VR Tech, Unity 3D, and 3D Max for its design VR system is complemented by a VR resource library and the VR classroom	VR system is composed of several factors: (1) “interactive” interaction, showing the dynamic nature of the system, (2) “imaginative” imagination, or the active integration of higher-order thinking skills to the user experience, and (3) immersion, or the sense of reality of the system As college students immersed in the VR system by interacting with several scenes, VR system assesses student competency through speech recognition and evaluation Test results after the testing of the VR system showed that students improved in their English language skills of listening and speaking (oral fluency and English mastery) Results indicated that participants who used VR-assisted multimodal text performed better in the immediate post-test and delayed post-test compared to the other EG and the CG Results indicated that participants who used VR-assisted multimodal text received highest scores in both post-tests for reading comprehension. The study indicated significant difference of total reading test score between VR group and paper group. The study also indicated significant difference of total reading test score between VR group and paper group Further data showed that relationship between input modality and levels of cognitive load post-treatment were similar for all in all three groups VR-assisted multimodal text group did better compared to the other two
Su (2021)	Does ‘WOW’ translate to an ‘A’? Exploring the effects of virtual reality assisted multimodal text on Chinese grade EFL learners’ reading comprehension	Evaluating effects of VR-assisted multimodal texts, video-assisted multimodal texts, and print-based monomodal texts on Chinese EFL 8th Grade learners in their reading skill performance and cognitive load	Mixed-method design (quasi-experimental & qualitative) Utilized a three-stage reading treatment (pre-intervention, actual intervention, and post-intervention) The VR-assisted materials used vSpace for development	Results indicated that participants who used VR-assisted multimodal text performed better in the immediate post-test and delayed post-test compared to the other EG and the CG Results indicated that participants who used VR-assisted multimodal text received highest scores in both post-tests for reading comprehension. The study indicated significant difference of total reading test score between VR group and paper group. The study also indicated significant difference of total reading test score between VR group and paper group Further data showed that relationship between input modality and levels of cognitive load post-treatment were similar for all in all three groups VR-assisted multimodal text group did better compared to the other two

groups in terms of macrostructural reading comprehension
 The paper present positive responses to VR-assisted multimodal text, which include include tactile maneuverability, interaction, graphic animations, and other digital effects
 Conversely, students also gave negative feedback to VR-assisted multimodal text, ranging from complexity to time cost and distraction.

Features of multimodal approaches to language teaching using AI and VR

Existing and previous literature indicates that the use of AI (specifically and mostly, generative AI) and VR improves multimodal language teaching. Generally, using AI and VR through a multimodal language teaching approach offers personalized in learning experiences. Maneuverability offers English language learners a personal hand to modify their learning experiences to their liking and preferences that would aid in their English language learning. Interaction to technology offers exchange of communication between the technology used, its content, and the student-user, allowing immersive learning environments. Integration of real-life situations is also evident to support contextualized cultural competence, allowing students to experience and use language towards fluency and proficiency in their own setting.

The impact on individual learners of the use of AI and VR is also worth noting for multimodal language teaching. Promotion of increased motivation is seen in all referred studies, where the use of AI and VR through auditory, visual, gestural-kinesthetic, and textual modalities have been seen to foster both an increase of intrinsic and extrinsic motivation. This is true that as students see their language learning experience is made tailor-fit for them by their teachers, they become active and engaged in their learning of lessons and skills, and this allows them to become more immersed in language acquisition and learning. Collaborative learning opportunities are also given emphasis by the reviewed literature, as AI and VR offered and facilitate collaborative learning experiences as these tools used within multimodal language language had students to interact and communicate with their peers in the virtual/digital space.

The Technology Integration Matrix (TIM), developed by Florida Center of Instructional Technology (FCIT), reflects posits that there are specific levels of technology integration in the curriculum/teaching-learning process, and all cited literature fit beyond the active level of the TIM, as the use of AI and VR in multimodal language teaching goes over the "conventional and procedural use of educational tools" (Piehler, 2016).

Levels of Technology Integration into the Curriculum

	Entry	Adoption	Adaptation	Infusion	Transformation	
Characteristics of the Learning Environment	Active	Information passively received	Conventional, procedural use of tools	Conventional independent use of tools; some student choice and exploration	Choice of tools and regular, self-directed use	Extensive and unconventional use of tools
	Collaborative	Individual student use of tools	Collaborative use of tools in conventional ways	Collaborative use of tools; some student choice and exploration	Choice of tools and regular use for collaboration	Collaboration with peers and outside resources in ways not possible without technology
	Constructive	Information delivered to students	Guided, conventional use for building knowledge	Independent use for building knowledge; some student choice and exploration	Choice and regular use for building knowledge	Extensive and unconventional use of technology tools to build knowledge
	Authentic	Use unrelated to the world outside of the instructional setting	Guided use in activities with some meaningful context	Independent use in activities connected to students' lives; some student choice and exploration	Choice of tools and regular use in meaningful activities	Innovative use for higher order learning activities in a local or global context
	Goal-Directed	Directions given, step-by-step task monitoring	Conventional and procedural use of tools to plan or monitor	Purposeful use of tools to plan and monitor; some student choice and exploration	Flexible and seamless use of tools to plan and monitor	Extensive and higher order use of tools to plan and monitor

Figure 1. *The Technology Integration Matrix (TIM), from the Florida Center of Instructional Technology (FCIT). From Piehler (2016)*

Beneficial Impact of using AI and VR in multimodal language teaching for language skills development

Using AI and VR gives out beneficial implications for language skills development. The receptive language skills of listening, reading, and viewing have been utilized in the cited literature and these reported a significant difference of increased comprehension and capability in using the receptive language skills. Students have thus become sensitive in dealing with their assigned lesson or literary text and they saw the greater need to be immersed in them through AI and VR. Not only did they find motivation to be involved with their material, but students were also engaged with a more meaningful means of understanding the content and context of their learning.

In the same way, the papers cited present a development of the three productive language skills of speaking, writing, and representing. For all six language skills, AI and VR delivered a quick response/feedback for its users, allowing students to track and pace their own learning. Learners are thus engaged in dynamic conversations, allowing both confidence and fluency. The use of AI has allowed students to explore more vocabulary and have their grammar corrected. They are also given the means to visualize and represent their ideas through charts and graphs. Thus, the meaningful understanding of the lesson/text allows learners to respond to them in a more meaningful (if not equally), diverse, personalized, and authentic way. It can be said then that the use of AI and VR in language acquisition and learning promotes literacy skills, media and information skills, life skills, and other relevant 21st century skills.

Furthermore, it is extracted from the literature cited that students seem to have a positive attitude towards the AI and VR for language skills development. The combination of auditory, visual, gestural-kinesthetic, and textual modalities for language skills development by means of AI and VR integration in both teachers' pedagogy and students' learning allowed a greater. Once more, one can connect this perception to the TIM. The use of AI and VR for language skills development targets specific and diverse needs of every language learner, and that as teachers use AI and VR in their lessons, learners not only have students use the tools for the tools' sake, but make language learning alive by putting students into specific contexts and having them use the tools for "a higher-order of use" (Piehler, 2016) to plan and monitor their own progress.

Emerging challenges of using AI and VR in multimodal language teaching for language skills development

Challenges have also been observed among learners' language skills development in the integration of AI and VR during the instances of multimodal language teaching. On a physiological perspective, prolonged use of computer proved to be harmful to learners' eyes, where in the case of Su (2021) some students even experienced dizziness in their use of VR technology in language learning. Distraction also proved to be a challenge in the technology integration in multimodal language teaching as some students had not been engaged in their lessons. Technological limitations also had been discovered in that their integration and use of AI and VR to their lessons proved to be difficult, as they are adjusting from the real to the virtual. Furthermore, hesitation to use these technologies were also evident due to low proficiency/knowledge on using technologies in the classroom. While these students use more than one mode of learning, students also have been observed with difficulties in coping up with other modes of learning and demonstrating or practicing the target language skill (Zhang, 2022).

Conclusions

The boom of computer-assisted language learning has shifted from application and software use and development and Internet integration to the use of AI and VR. And this is greatly evident in the 2020s when the revolution of AI and VR has spread across the world (Ilyas, 2020), reaching even the world of language learning and teaching. This paper deduced that the use of AI and VR through multimodal language teaching proved to complement, enhance, and provide more avenues for improvement and development on English language skills among students. Improvement of language skills use among students evident as learning language, linguistics, and literature goes beyond the classroom and into the bigger real world and the immense digital/virtual world. Furthermore, the integration of AI and VR in multimodal language teaching is beneficial for both teachers, as they handle multi-modes of language arts resources. and for students as they utilize AI and VR in their learning through various modes of learning to improve their six language skills. However, some of the studies also presented challenges and difficulties in using AR and VR in the multimodal language teaching-learning process.

Moreover, in the wider scale, there are still language teachers who retain a negative attitude to these two technologies in the era of a multilingual, multicultural, and multimodal language teaching. It must be also acknowledged that not all schools have the means to afford these tools. Thus, school heads, education administrators, and educational policy-makers ought to explore and assess the use of AI and VR in their own language learning contexts, to see both the strengths and weaknesses these may present to their learning communities. It is suggested that further studies be conducted to know their attitudes and perceptions of English language teachers in localized contexts on use of AI and VR in their classrooms. Studies should also be explored as to how AI and VR integration through multimodal language teaching affect other learner groups like slow learners, low-performing students, special education needs (SEND) students, and other learners from different backgrounds through their experiences and their performance, while considering access to technology and computer/ICT literacy on a long-term basis.

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