

E-COLLABORATIVE LEARNING SYNERGY: EXPLORING PEER INTERACTION AND ENGLISH PROFICIENCY IN VIRTUAL COLLABORATIVE CLASSROOMS

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Abstract

E-Collaborative learning (ECL) is revolutionizing language education by harnessing digital platforms to enrich peer interaction and elevate English proficiency. This comprehensive literature review addresses the urgent necessity to consolidate findings on the effectiveness of ECL and its significant integration into pedagogy in educational environments. Through adherence to PRISMA guidelines, the study scrutinized 25 peer-reviewed articles published between 2019 and 2024, unearthing four fundamental themes: (1) Online Learning and Engagement, (2) Language Proficiency and Learning Outcomes, (3) Multimodal and Intercultural Communication, and (4) Student Attitudes and Self-Efficacy. The results unravel the intricate interplay of technology, pedagogy, and human factors in shaping language acquisition outcomes. ECL gives prominence to the demand for tailored ECL strategies and charts a course for future research, including longitudinal studies on the enduring effects of ECL and the creation of standardized assessment tools for collaborative online learning environments. The analysis delves into the potential of ECL to bridge cultural gaps and cultivate global communication skills, addressing the evolving requirements of language learners in an increasingly interconnected world. This exhaustive analysis imparts invaluable insights for educators and researchers, propelling the move towards more effective ECL implementation in language education and contributing to the progress of digital literacy in the field.

Keywords: E-Collaborative learning (ECL), Peer interaction, English Proficiency, Systematic Literature Review

INTRODUCTION

The rise of e-Collaborative Learning (ECL) environments has transformed the field of education by providing exceptional opportunities for peer interaction and language acquisition. ECL utilizes digital platforms to establish interactive, student-focused classrooms that promote collaboration and communication (Jassim et al, 2022). Effective ECL practices highlight the significance of organized interaction, the incorporation of multimedia resources, and the utilization of both synchronous and asynchronous communication tools to cultivate an immersive and dynamic learning environment. By creating a virtual space where students can engage in real-time English practice using various digital tools, ECL has the potential to significantly improve English language proficiency, especially in speaking.

Despite its benefits, ECL comes with its own set of challenges, especially in terms of student interaction. Unequal participation, technological hurdles, and the absence of non-verbal cues (Ho et al., 2023; Pauletto, 2022; Strauß & Rummel, 2021) can impede effective communication and

collaboration. Moreover, varying levels of digital proficiency among students can worsen these issues, leading to frustration and disengagement. All students need to possess the necessary skills and resources to take full part in ECL activities for the programs to succeed. Teachers should be adept at utilizing digital tools to monitor and foster participation while offering extra assistance to students grappling with the technology or the online learning format.

In ECL environments, the unbalanced English-speaking proficiency among students presents a significant challenge. While ECL provides a platform for practicing English, not all students benefit equally due to differences in their starting proficiency levels, confidence, and access to practice opportunities. Students who are less proficient or less confident in their English speaking abilities may be less likely to actively engage in discussions (Ebenezer et al., 2022) , missing out on valuable practice. This underlines the imperative need for targeted interventions and personalized support to ensure that all students can develop their English-speaking skills effectively in ECL settings. By addressing these gaps and challenges, educators can optimize ECL environments to support equitable and effective language learning.

STATEMENT OF PROBLEM

The use of e-Collaborative Learning (ECL) in education presents both advantages and disadvantages. While ECL provides new opportunities for peer interaction and language learning through digital tools and multimedia resources, it also encounters challenges such as uneven student participation, technological barriers, and the lack of non-verbal communication in virtual settings. These difficulties are often amplified by differing levels of digital literacy and English proficiency among students, potentially resulting in unequal engagement and learning outcomes.

Addressing these issues necessitates a comprehensive approach. Educators must be skilled in utilizing digital tools to monitor and encourage participation while offering specific support to students who are struggling (Insorio, 2021). There is an urgent requirement for tailored interventions to bridge proficiency gaps and ensure fair access to practice opportunities. By adapting ECL environments to accommodate diverse proficiency levels and learning needs, educators can fully utilize these platforms to facilitate effective and inclusive language learning.

LITERATURE REVIEW

Fueled by digital platforms, ECL is reshaping language education. By leveraging technology, ECL enhances peer interaction and English proficiency. However, despite its growing adoption, gaps persist in understanding its effectiveness and implementation challenges. This literature review bridges this gap by systematically analyzing 25 peer-reviewed studies from 2019 to 2024. This approach caters to diverse learning styles, fostering meaningful interactions. Yet, challenges loom—technological barriers, digital literacy disparities, and evaluating collaborative work. ECL's impact on language proficiency particularly in speaking, underscores the need for tailored strategies and standardized assessment tools.

Structured peer feedback systems emerge as a cornerstone. Learners engage in reciprocal assessments, refining language skills. Authentic communication tasks such as role plays, and debates immerse students in real-world language use. Multimodal tools accommodate varied learning preferences for instance videos, chats, and forums (Pouromid, 2019). ECL's flexibility allows asynchronous collaboration, transcending geographical boundaries. Educators must scaffold digital literacy, ensuring seamless ECL integration. Therefore, according to Insorio (2021), training teachers and students in ECL pedagogy is vital for successful implementation.

Technological hurdles persist. Uneven access to devices, stable internet, and software proficiency hinder equitable ECL experiences (Cabalquinto, 2019). Teachers grapple with adapting traditional practices to digital contexts. Evaluating collaborative work—balancing individual contributions and group dynamics—poses complexities. Longitudinal studies are essential to gauge ECL’s lasting impact on language acquisition. Standardized assessment tools can measure proficiency growth consistently. Future research should explore personalized ECL strategies, considering learner diversity and evolving digital landscapes.

ECL’s promise lies in its ability to foster peer interaction and elevate language proficiency. As educators, they must embrace ECL’s transformative power while addressing challenges head-on. By tailoring strategies, promoting digital literacy, and advocating for rigorous assessment practices, one may unlock ECL’s enduring effects. Ultimately, ECL transcends mere technology—it shapes how students learn, communicate, and bridge language divides in a digital age.

METHOD

Identification

In the systematic review process, two main stages are used to choose relevant publications for a report. First, keywords and related terms are identified by consulting thesauruses, dictionaries, encyclopedias, and previous research. Then, search strings are created for the Scopus and Web of Science (WoS) databases (as shown in Table 1). In the initial phase of the systematic review process, a total of 2957 publications were found in both databases combined.

Table 2: The search string

Scopus	TITLE-ABS-KEY (interaction AND english AND proficiency AND online) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA, "SOC") OR LIMIT-TO (SUBJAREA, "ARTS") AND (LIMIT-TO (DOCTYPE, "ar") AND (LIMIT-TO (PUBSTAGE, "final") AND (LIMIT-TO (SRCTYPE, "j") AND (LIMIT-TO (LANGUAGE, "English") AND (LIMIT-TO (OA, "all"
WoS	interaction AND English AND proficiency AND online (Topic) and Open Access and 2019 or 2020 or 2021 or 2022 or 2023 or 2024 (Publication Years) and Article (Document Types) and English (Languages)

Screening

In the process of screening, it is meticulously examined a variety of potential research materials to find content that aligned with specific research questions. Various criteria were utilised, including the application of telecollaboration in education. Duplicate papers were systematically removed throughout the process. Initially, 663 publications were excluded, and in the subsequent phase, 74 papers were evaluated using specific exclusion and inclusion criteria. The primary criterion involved scrutinising literature, including research papers, as the primary source of practical recommendations. This encompassed reviews, meta-syntheses, meta-analyses, books, book series, chapters, and conference proceedings not covered in the most recent study. It is important to note that the review was limited to English-language publications, and the search only included the years 2019 to 2024. Ultimately, only 17 publications were rejected due to duplication.

Table 3: The Search String

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	Between 2019-2024	< 2019
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press
Subject Area	Education	Besides Education
Countries	All	-

Eligibility

In the third phase of the research process, referred to as the eligibility stage, a comprehensive review of 74 articles was carried out. A specialized team of experts extensively examined the titles and key content of each article to ensure they satisfied the inclusion criteria and matched the research goals. Unfortunately, 66 reports were deemed irrelevant and promptly discarded. These articles either had insignificant titles, contained abstracts not related to the study's objectives, or lacked full-text access with empirical evidence. With unwavering attention and detailed scrutiny, the remaining 25 articles underwent rigorous evaluation, ultimately being the only ones to fulfill the criteria (see Figure 1).

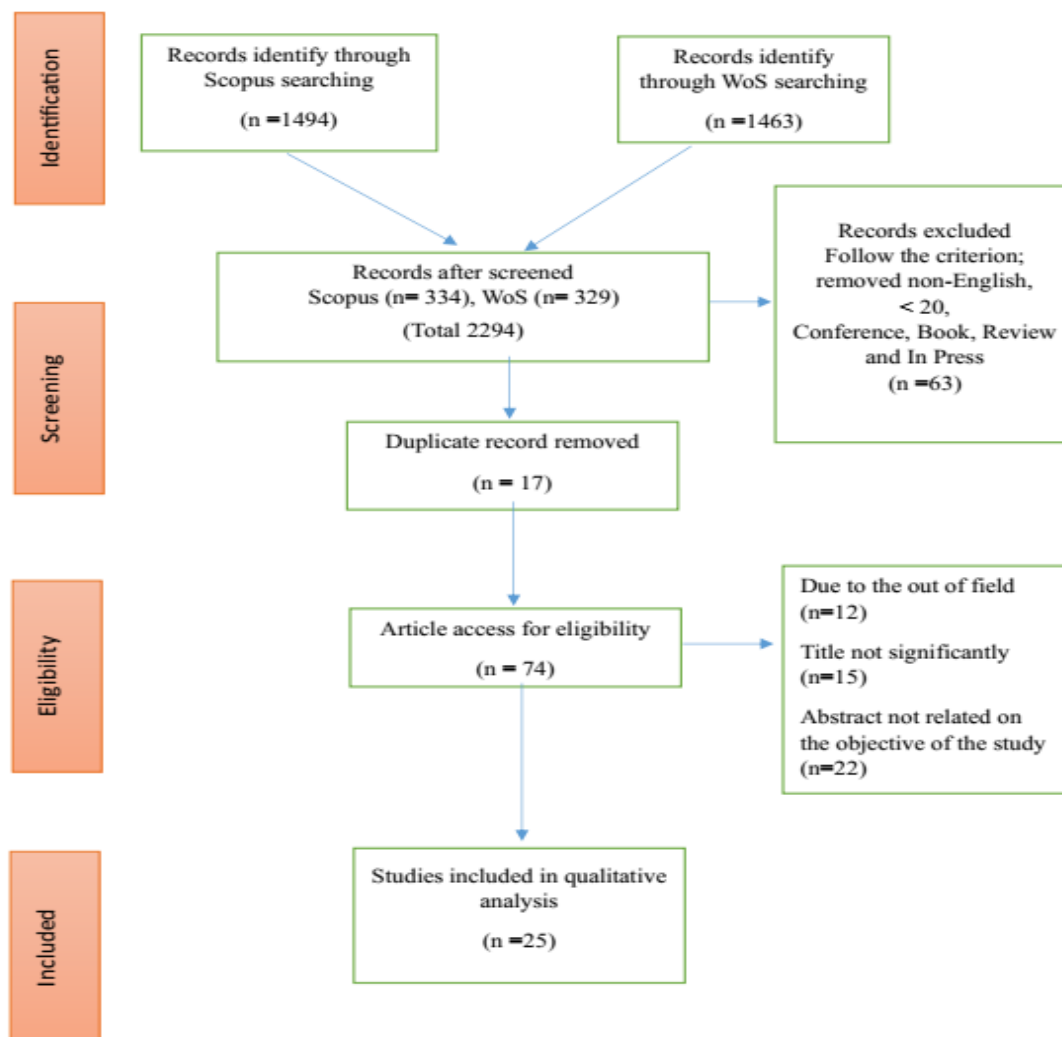
Data Abstraction and Analysis

The study utilized integrative analysis as one of the assessment strategies to combine various research designs, including quantitative, qualitative, and mixed methods. The primary aim was to identify relevant topics and subtopics, with data collection marking the initial step in this process. The authors carefully analyzed a compilation of publications (as displayed in Figure 1) to extract material pertinent to the study topics. They also evaluated significant studies related to e-collaborative learning in diverse educational settings, encompassing methodologies and research findings. Subsequently, the authors collaborated with co-authors to derive themes from the evidence, maintaining a log throughout the data analysis process to record relevant analyses, viewpoints, and thoughts. After comparing the results, any inconsistencies in the theme design process were addressed through discussions among the authors. The resulting themes were then refined to ensure consistency. Additionally, two experts, one specializing in educational technology and the other in Teaching English as A Second Language (TESL) and e-collaboration, conducted the analysis selection to ascertain problem validity. The expert review phase was instrumental in establishing the clarity, significance, and suitability of each subtheme through domain validation.

Quality of Assessment / Appraisal of Quality

To guarantee consistency and relevance, the topics were carefully designed and vetted by two specialists in educational technology, TESL and telecollaboration. Another expert then carefully evaluated the themes to make sure they were acceptable, meaningful, clear and impactful. Furthermore, a thorough assessment of 25 publications was carried out, considering a number of quality standards, including the objectives, techniques, recruiting plan, data gathering, analysis, conclusions, and overall study worth.

Figure 1. Flow diagram of the proposed searching study (Moher et al, 2011)



RESEARCH FINDINGS

The way that pedagogy and technology interact has a significant impact on how language education is changing, especially when it comes to online learning. Themes such as online engagement, language proficiency, multimodal communication, and student attitudes become crucial focal points as educational institutions adjust to new realities. Studies demonstrate how virtual classrooms have a major impact on second language learners' engagement, resulting in more positive student attitudes and improved collaborative learning opportunities (Almusharraf & Bailey, 2021). Moreover, the correlation between language competence and efficacious learning results emphasizes the need for customized teaching approaches.

Although student self-efficacy and attitudes toward online settings are critical in determining performance in educational settings, the significance of multimodal resources in promoting intercultural communication enhances the learning experiences of intercultural speakers (Rajpasit, 2020). Together, these themes provide light on the difficulties and possibilities that characterize language learning in the modern day, providing insightful information for both scholars and educators.

Online Learning and Engagement

The environment of education has changed dramatically as a result of online learning and interaction, especially in language learning. With the growing adoption of virtual platforms by educational institutions, it is imperative to pay close attention to the dynamics of student engagement and involvement. Teachers and academics are now looking into how students view and interact with digital learning environments as a result of the COVID-19 pandemic and the move to online learning (Almusharraf & Bailey, 2019).

Studies reveal that learners frequently feel both positively and negatively about taking classes online (Alahmadi & Alraddadi, 2020), yet many like the flexibility and accessibility they provide (Hazaymeh, 2021). Nonetheless, obstacles like low engagement and feelings of loneliness might make learning less effective overall. Collaborative learning and interactive exercises are two of the most effective online engagement tactics for building language competency and promoting meaningful communication (Xhaferi & Xhaferi, 2021). Table 1 below lists four articles related to the theme,

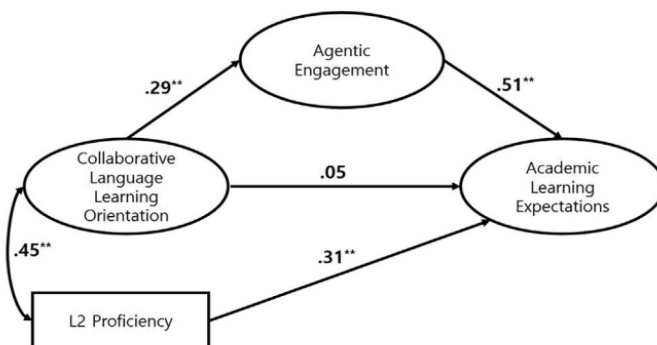
Table 2: Online learning and engagement

No	Author	Year	Methodology/Findings/Advantages
1	Alahmadi, NS; Alraddadi, BM	2020	Quantitative research method using a questionnaire with 19 statements; 90 Saudi female undergraduate students participated. Good degree of communication and interaction among Saudi students in virtual classes; Positive attitude towards using online classes for L2 learning.
2	Almusharraf, NM; Bailey, D	2021	Questionnaire study with 329 South Korean university students; Data analysis using SPSS. Collaborative language learning orientations were a significant predictor of academic learning expectations, fully mediated by agentic engagement.
3	Hazaymeh, W.A.	2021	Online survey based on ISTE standards; 60 undergraduate students. Positive attitude towards online distance learning; High scores in creativity, innovation, communication, collaboration, research, critical thinking, and digital citizenship; 86.66% acquired language proficiency successfully.
4	Xhaferi, B.; Xhaferri, G.	2021	Students' questionnaires, reflections, and classroom observations; 80 students and 5 EFL teachers. Students perceived interaction as very important; Exemplary interaction achieved through the Question & Answer method, comprehension technique, and discussion/analysis of online videos.

The theme of Online Learning and Engagement delves into the workings of virtual classrooms and how they affect the engagement and learning of second languages. During the COVID-19 pandemic, a number of studies look into how students feel about and perceive online language instruction. Rahmawati (2016, as cited in Hazaymeh, 2021) discovered that students were extremely positive about utilizing online learning in English language skills. However, Cancino and Towle (2022) reveal that students feel unmotivated, isolated, and disheartened in participating in online courses and it is advised that teachers take their role in motivating those students.

Studies by Alahmadi & Alraddadi (2020) reveal that Saudi undergraduates shown a commendable level of engagement and communication in online courses, along with a favorable disposition towards utilizing these platforms for acquiring a second language. Similarly, agentic engagement mediated the relationship between collaborative language learning orientations and academic learning expectations, as proven by South Korean university students.

Figure 2 Result for mediation model (taken from Almusharraf & Bailey, 2021)



The figure above indicates that enhancing the chances for students to cooperate while learning a second language will have a beneficial effect on learning results in an English as a Foreign Language (EFL) videoconference class. All the connections were positive, and active engagement played a role in linking collaborative language learning orientation with academic learning expectations. The study underlines the significance of interacting with others in class, especially the instructor, to achieve optimal learning results in video-conferencing classes. In an English as a Foreign Language (EFL) communication course, the objective is to give learners a chance to practice genuine English, and it appears that student-instructor interactions are essential for cultivating positive learning attitudes in the online video-conferencing setting.

EFL students in North Macedonia perceived interaction as very important in online classes, with exemplary interaction achieved through methods such as Q&A, comprehension techniques, and analysis of online videos. Conversely, Chilean undergraduate students held overall positive views towards fully online language learning components but negative views towards online participation.

According to two research, one in Saudi, undergraduate students engaged and communicated well in virtual classes and had a positive attitude about using the internet to learn a second language. In a similar vein, in South Korea, university students showed that, via agentic participation, collaborative language learning orientations were a major predictor of academic learning expectations.

Language Proficiency and Learning Outcomes

The focus on language proficiency and learning outcomes is crucial in education, especially in the context of second language acquisition. As global communication increasingly depends on proficiency in multiple languages including English, it is important to understand the factors that affect language learning outcomes. Research shows that various teaching methods, including online learning, flipped classrooms, and interactive tasks, have a significant impact on students' language proficiency (Cancino & Towle, 2022).

Effective engagement in these methods not only improves grammatical knowledge and vocabulary development (Lai & Wang, 2024) but also supports important skills such as communication, critical thinking, and collaboration. Additionally, students' attitudes toward learning methods, their self-efficacy, and the use of digital resources have significant roles in shaping their language acquisition experiences. Individual factors like motivation, cultural background, and prior knowledge also influence the interaction between language proficiency and learning outcomes. Mayanondha and Soontornwipast (2020) highlight how 40 Thai students with varied English proficiency levels' full participation in the online course can improve their grammar. The improvement can be seen as the following,

Table 2: Paired-samples t-Test of the mean scores of pre-test and post-test

	Pre-test		Post-test		t	P
	Mean	SD	Mean	SD		
English grammar proficiency test	16.78	5.83	20.25	5.43	5.47	.000*

* p < 0.05

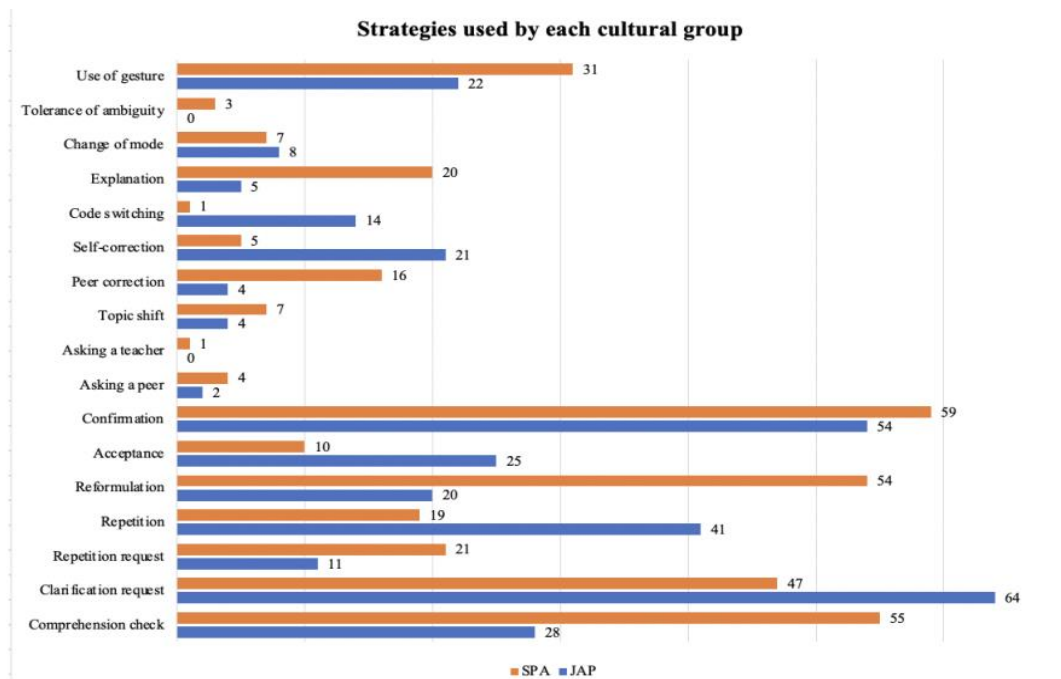
Both researchers conducted a study to assess the effectiveness of an interactive web-based course in enhancing students' English grammar skills. They compared students' test scores before and after taking the course and also gathered their feedback. The results were quite positive, with students' average scores increasing significantly from about 17 to 20 points out of a possible total. This improvement was statistically significant. Additionally, students themselves reported feeling much more confident about their grammar skills. They strongly agreed that their grammar had improved and that they felt more confident using it after completing the course. These findings suggest that the online course was successful in helping students enhance their English grammar abilities.

Multimodal and Intercultural Communication

In today's interconnected world, successful communication involves more than just words. It encompasses a wide range of communication methods and cultural subtleties. Multimodal and intercultural communication plays a crucial role in understanding the intricate relationship between diverse communication channels and cultural contexts. This approach acknowledges that meaning is communicated not only through language, but also through visual, auditory, and gestural elements, all of which are deeply influenced by cultural backgrounds (Guill-Garcia, 2023). With the continuous evolution of technology, the capability to navigate these multimodal and intercultural spaces has become increasingly essential. It is related to online educational platforms, that students now need to interpret and convey messages across a variety of media while being attuned to cultural disparities (Alsayer, 2023) . This fusion of communication methods and cultures presents both challenges and opportunities, necessitating a comprehensive comprehension of how one constructs and interprets meaning in this interconnected world.

In line with the above statement, the research by Pouromid (2019) and Guill-Garcia (2023) underlines the importance of using different forms of communication to overcome intercultural challenges in online learning environments. These studies illustrate how learners employ various communication methods to bridge cultural and linguistic gaps. In doing so, Guill-Garcia's study has scrutinized communication strategies used by Japanese and Spanish students (of different cultural backgrounds), as portrayed by the following figure,

Figure 3 Strategies in communication



The above figure manifests the number of strategies used by both groups of culturally-diversified students in three online audio-visual interactions. “The most used strategy is not the same for both cultural groups” (Guill-Garcia, 2023, p.175) is agreeable and yet suitable with each culture’s choice to accomplish negotiation of meaning in their interaction.

On the contrary, Rajpasit has stated that the established framework for English language instruction to non-native speakers requires reevaluation. The modern English language teaching (ELT) classroom needs to integrate a broader range of target cultures, beyond the predominant focus on American and British cultures. This shift aims to facilitate the cultivation of global perspectives and the fostering of respectful attitudes towards cultural diversity among English language learners. Therefore, apart from linguistic skills, according to Pourumid (2020) intercultural competence is important to students “to give them the ability to communicate in the target language smoothly” (p. 634).

In summary, these studies emphasize the increasing importance of developing multimodal literacy and intercultural competence in language education, particularly as learning occurs more frequently in diverse, technology-enhanced settings.

Student Attitudes and Self-Efficacy

The language education landscape has been greatly impacted by the digital revolution, leading to the emergence of blended learning that integrates traditional classroom methods with new online approaches. This combination of findings from four recent studies sheds light on the intricate connections between student attitudes, self-efficacy, and learning outcomes in these evolving educational contexts.

Karaaslan and Kılıç (2019) discovered a marked contrast in the perspectives on blended learning between high and low achievers, underscoring the crucial role of learner traits in effective implementation. Kang's (2022) exploration of self-recorded video tasks illustrates how technology can promote self-regulation in language learning, while also identifying areas where students may need additional assistance. These results emphasize the importance of personalized teaching strategies that cater to the diverse needs and proficiency levels of learners.

Lorette and Dewaele's (2019) study implies that there could be a potential advantage for bilingual individuals in recognizing emotions, although the impact may differ depending on their language abilities. This dimension of emotional intelligence brings an added layer of complexity to the comprehension of multilingual proficiency. Additionally, Ramalingam et al. (2023) underscore the significance of the roles played by instructors and the interactions between instructors and learners in blended learning environments, particularly in relation to verbal communication skills. Together, these research findings depict a dynamic educational environment where technology, teaching methods, and human elements intersect, requiring continuous innovation and adjustment from both educators and learners.

DISCUSSION AND CONCLUSION

The use of digital technology has significantly changed how languages are taught, leading to a new era of combined and online learning environments. Recent research sheds light on the complex relationship between technology, teaching methods, and human factors in shaping language learning outcomes.

Active engagement in online learning is crucial in virtual language classrooms. Studies indicate that students generally have a positive view of online learning due to its flexibility and accessibility (Alahmadi & Alraddadi, 2020; Hazaymeh, 2021). However, maintaining high levels of engagement and reducing feelings of isolation can be challenging. Collaborative learning strategies and interactive activities have been proven to be effective in improving language skills and meaningful communication in online settings (Almusharraf & Bailey, 2021; Xhaferi & Xhaferri, 2021).

The link between language proficiency and academic performance is intricate and multifaceted. Mayanondha and Soontornwipast (2020) demonstrated that interactive web-based courses can significantly improve students' grammar abilities, leading to substantial enhancements in test scores and self-reported confidence. This emphasizes the potential of well-designed online resources to bring about concrete enhancements in language proficiency.

In today's interconnected world, the importance of diverse and intercultural communication skills cannot be overstated. Pouromid (2019) and Guill-Garcia (2023) highlight how learners utilize varied communication strategies to navigate cultural and linguistic disparities in online settings. Guill-Garcia's (2023) research reveals interesting differences in the communication strategies employed by Japanese and Spanish students, portraying the influence of cultural backgrounds on patterns of interaction. These findings underscore the necessity for language education to promote not only linguistic proficiency but also intercultural competence and multiliteracy (Rajpasit, 2020).

Student attitudes and belief in their own capabilities are important factors for success in blended learning environments. Karaaslan and Kılıç (2019) discovered significant differences in attitudes towards blended learning between high and low achievers, indicating that learner characteristics are key to the effectiveness of such approaches. Kang's (2022) study of self-recorded video tasks illustrated how technology has the potential to improve self-regulation in language learning, while also identifying areas that may require additional support.

Lorette and Dewaele's (2019) research introduces an interesting aspect to one understanding of multilingual proficiency by suggesting a possible advantage for bilingual individuals in recognizing emotions. This finding emphasizes the intricate relationship between language skills and socio-emotional abilities, presenting new avenues for research and innovative teaching methods.

SUMMARY

In brief, language education is rapidly changing due to technological advancements and global shifts. Recent research emphasizes several key points: the importance of engaging students in virtual classrooms, the potential of well-designed online resources for enhancing language skills, the necessity of developing multimodal literacy and intercultural competence along with traditional language abilities, the impact of student attitudes and self-belief on success in blended learning environments, and the intricate relationship between multilingualism and socio-emotional skills. These findings highlight the need for a comprehensive approach to language education that incorporates technology, innovative teaching methods, and a deep understanding of learner characteristics and cultural contexts. Previous research indicates that enhancing students' chances to engage with peers and instructors is crucial in promoting the acquisition of a second language (SLA) (Muñoz-Basols, 2023). As the field continues to evolve, educators and researchers must adapt their methods to meet the changing needs of language learners in this increasingly digital and interconnected world, leading to more personalized, culturally sensitive, and technologically advanced language education.

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