

Using Technology-Enabled Instruction to Empower Saudi EFL Classrooms: A Comparative Study

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Abstract—Despite students commencing English language learning from a young age, many continue to display low proficiency scores in English during higher education. In today's digital era, traditional instructional methods appear increasingly obsolete and warrant enhancement or substitution with innovative technology-enhanced instructions (TEIs), which have demonstrated the potential to enrich educational environments by introducing novel teaching and learning opportunities. This study seeks to examine the efficacy of Web-Based Learning (WBL), Blended-Based Learning (BBL), and Online-Based Learning (OBL) for low-proficient EFL/ESL learners. The study engaged 187 freshmen, selected through purposive sampling, and adopted a quasi-experimental method, forming four distinct groups: three experimental and one control. The experimental groups were exposed to WBL, BBL, and OBL, respectively, while the control group received a traditional teaching approach (TTA). Assessment of participants' core linguistic skills—listening, reading, vocabulary, and grammar was conducted using the British Council English score test, both as a pre-test and a post-test. RM-ANOVA was utilized to analyse data. The analysis revealed significant improvements in all core skills from pre-test to post-tests across all groups. Notably, the groups participating in WBL and BBL performed better than those in OBL and TTA in overall core skills assessments. These outcomes were interpreted within the frameworks of technology integration, interactive learning dimensions, and traditional educational perspectives, providing critical insights for stakeholders contemplating the incorporation of more TEIs in EFL contexts under development.

Index Terms—efficacy of web-based learning, interactive learning dimensions, linguistic skills, significant improvements, today's digital era

I. INTRODUCTION

In higher education, English plays a key role as a main language for teaching and a vital tool for academic and professional success worldwide. Despite starting English education early, many students fail to achieve sufficient proficiency, hindering their academic progress and limiting future job opportunities (Derwing & Munro, 2005; Cummins, 2000). Being proficient in English during their higher education is significant for students. It helps students understand complex academic material, take part in intellectual discussions, and succeed in a globally connected world (Crystal, 2003). The ability to communicate and understand English well is crucial, not just helpful, for meeting the demands of global higher education and securing opportunities in the international job market. Higher English skills are linked to better academic success and job outcomes, highlighting its important role in education (Crystal, 2003; Jenkins, 2007; Seidlhofer, 2011; McKay, 2005). The challenge of low English proficiency among university students is significant and worrying. Traditional passive learning and limited interaction methods have failed to meet today's diverse student needs (Alam et al., 2023; Usama, 2024a). This has ignited interest in new educational methods that use technology to create more engaging and interactive learning environments. These new methods aim to update educational experiences to better match the digital skills of modern learners (Graddol, 2010). This move toward using technology in the classroom is part of an overall pattern toward innovative concepts in education. This is because students today possess an extensive variety of learning styles and tastes that need to be addressed. In response to these

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educational challenges, Technology-Enhanced Instructions (TEIs) have emerged as promising solutions to revitalize language education and address the deficiencies of conventional approaches. TEIs encompass a range of pedagogical strategies, including Web-Based Learning (WBL), Blended-Based Learning (BBL), and Online-Based Learning (OBL), each offering exclusive benefits and challenges. These technologies have been shown to potentially enrich learning experiences and outcomes by integrating cutting-edge technology and interactive elements that cater to diverse learning preferences and paces. The integration of technology into language education not only addresses the immediate need for more effective teaching methods but also aligns with the ongoing trends of digitalization in education, promising to transform traditional educational landscapes into more adaptive and responsive systems (Means et al., 2013; Hockly, 2018).

This study investigates the efficacy of web-based learning (WBL), blended-based learning (BBL), and online-based learning (OBL) in enhancing grammar, vocabulary, reading, and listening skills in ESL/EFL students with low proficiency. The study was designed to offer helpful insights for EFL/ESL instructors, curriculum designers, and policymakers. By elucidating the relative effectiveness of different TEIs, the study will inform decisions regarding the integration of technology in language education curricula. Furthermore, the data will support discussions about educational change and innovation, particularly when conventional approaches fall short of meeting the needs of students.

A. Research Problem

The majority of learners still struggle with expressing themselves enough even if they start learning English early in life when they show up to college. Technology-enhanced education (TEI) already has been established to be capable of enhancing the effectiveness of educational institutions by offering teachers and students fresh approaches to teaching and learning. Traditional approaches to instruction seem to be going away in the current digital era, which emphasizes the need to enhance them or substitute modern TEIs.

B. Research Purpose

The purpose of this study is to assess if online-based learning (OBL), blended learning (BBL), and web-based learning (WBL) offer advantages for learners who suffer from English as a foreign/second language.

II. LITERATURE REVIEW

English language proficiency has been conceptualized as a multifaceted ability that encompasses understanding, using, and reflecting on the language across various contexts, which necessitates a deep engagement with both linguistic structures and cultural nuances. This proficiency is not merely about learning vocabulary or grammar but involves the ability to interpret and produce the language in ways that are both accurate and appropriate (Alptekin, 2002). The importance of English proficiency lies in its role in enabling clear communication of ideas, understanding complex texts, solving linguistic problems, and achieving personal goals, thereby playing a crucial role in both personal and academic success (Haneda, 2014). Lantolf and Thorne (2006) argued that English competence improved critical thinking, course comprehension, and academic engagement. Moreover, English proficiency is instrumental in expanding professional opportunities in the global market, where it often serves as a lingua franca (Jenkins, 2003). Thus, the development of English language skills is not only beneficial but essential for students who aspire to engage with global discourse communities and pursue international careers (Crystal, 2003).

Although English language proficiency is a critical goal in second/foreign language education (Vakili & Ebadi, 2019), acquiring this skill poses significant challenges for EFL learners, primarily due to its complex cognitive demands (Jabali, 2018). Mastery of English requires learners to integrate various linguistic components such as grammar, vocabulary, and mechanics concurrently (Dar & Khan, 2015). Research highlights several areas where learners commonly struggle, including limited vocabulary (Misbah et al., 2017), grammatical errors, and issues with punctuation and spelling (Younes & Albalawi, 2015). Additionally, learners often fail to maintain focus on the main topic (Muamaroh et al., 2020), exhibit a lack of logical progression in their ideas due to poor organizational skills (Ashraf et al., 2020), and demonstrate insufficient detail in supporting their arguments (Ariyanti & Fitriana, 2017), all of which contribute to their difficulties in achieving fluency and coherence in English.

To effectively tackle the challenges EFL/ESL learners encounter in achieving English language proficiency, researchers such as Anh (2019), Zandi and Krish (2017), and Aydin and Yildiz (2014) endorsed the adoption of technology-enhanced instructions (TEIs) into language education. Technological innovations are revolutionizing pedagogical approaches in higher education, with TEIs being progressively utilized to innovate and advance teaching and learning practices (Conole, 2014). These educational technologies enhance learners' English language skills by improving their grasp of idioms, vocabulary, sentence structures, and overall linguistic coherence. By offering engaging learning activities, activating prior knowledge, and providing exposure to authentic and multimodal resources—including graphs, websites, texts, videos, and pictures—these advanced instructional methods significantly refine conventional teaching strategies and thus boost the English language proficiency of EFL learners.

The first TEI in the present study examined web-based learning, which utilizes the World Wide Web to augment traditional classrooms by providing access to online activities and digital resources without reducing face-to-face class

time. The second TEI discussed is blended learning, effectively combining traditional classroom interactions with computer-assisted English language learning to offer a more accessible and flexible educational approach (Kvashnina & Martynko, 2016; Senffner & Kepler, 2014). Blended learning models, as categorized by Staker and Horn (2012), include the rotation model with shifts between modalities, the self-blend model complementing standard courses with online ones, the flex model which centers around online learning with on-site teacher support, and the enriched virtual model that primarily uses online platforms supplemented by required in-person sessions. The onset of the COVID-19 pandemic in 2020 accelerated the adoption of these models, particularly purely online learning, emphasizing its necessity as the pandemic restricted traditional educational settings (Basilaia & Kvavadze, 2020; Moorhouse, 2020). This purely online approach relies entirely on the internet, underscoring its role in advancing English language proficiency by providing immersive, continuous, and contextually rich learning environments.

Although multiple research projects investigated web, blended, and online learning in different settings, few have examined their comparative impact on EFL learners' English language skills. For example, Kawinkoonlasate (2019) conducted a quasi-experimental study comparing traditional and electronic learning methods in enhancing the English proficiency of 60 EFL learners, finding that those who received electronic learning showed superior language skills. Similarly, Norouzifard and Sadighi (2017) observed the positive impacts of online learning on the organization, conventions, and vocabulary of EFL university students. Among EFL learners in Iran, Alipour (2020) compared online, blended, and traditional methods for vocabulary development and discovered that students in both online and blended learning groups improved their vocabulary more than those in traditional settings. Usama et al. (2024b) looked at how communicative language teaching (CLT), web-based instruction (WBI), and mixed-mode instruction (MMI) enhanced the English language proficiency of medical students. The findings from this study indicate that students participating in WBI exhibited superior language learning outcomes compared to those engaged in MMI and CLT. This demonstrates that the WBI, which provides flexible, scalable, and resource-rich learning environments, is more effective in enhancing English language skills.

Despite the growing appeal of TEIs within higher education, institutions face significant challenges in maintaining state-of-the-art technological implementations tailored to their specific educational contexts. Academic planners are continually engaged in a dynamic process to identify and integrate the most effective TEIs that resonate with the exclusive characteristics of their teaching and learning environments. Zhang and Zhu (2018) argued that choosing an educational technique that serves all students is difficult since their efficacy varies by student demographic. Moreover, the indiscriminate application of these technologies can potentially undermine learners' academic performance, engagement, motivation, and overall attitude toward new educational methodologies. This situation underscores the necessity for thorough preliminary research, detailed analyses, and meticulous planning before the adoption of any TEIs. While existing literature includes investigations into the individual impacts of WBL, BBL, and OBL practices in ESL/EFL settings, there is a notable gap in studies that compare these different instructional strategies against one another. Web-based learning (WBL), blended-based learning (BBL), and online-based learning (OBL) are being evaluated to enhance grammar, vocabulary, reading, and listening among low-proficient Saudi EFL learners. Mayer's (2021) Cognitive Theory of Multimedia Learning suggests that verbal and visual information enhance learning, consequently, the study compares technology-enhanced instructional techniques to TTA. The goal is to identify which methodologies most effectively improve core linguistic skills such as grammar, vocabulary, reading, and listening. The motivation for this study stems from the significant gap between students' early exposure to English and their continued low proficiency in higher education settings—a discrepancy that not only undermines students' academic success but also impacts the overall quality and global competitiveness of educational institutions. The study is crucial as it investigates innovative educational strategies that leverage multimedia to make English language education more dynamic, engaging, and effective for today's learners, thereby addressing a pressing need in the educational landscape.

III. METHOD

To investigate the effectiveness of web-based learning (WBL), blended-based learning (BBL), and online-based learning (OBL) on improving English language proficiency among EFL students with low initial proficiency levels in Saudi Arabia, this study employed quasi-experimental pretest-posttest control group design. Participants were placed into experimental and control groups. The experimental group participated in activities utilizing WBL, BBL, and OBL to enhance core (vocabulary, reading, and grammar), listening, and writing skills. Conversely, the control group received traditional instruction without the integration of these technological methods. The study meticulously controlled the instructional strategies used in each session for both groups to maintain the consistency and reliability of the intervention. The efficacy of multiple methods of instruction was determined by pre- and post-test English language improvements. This methodological approach aims to identify which instructional method most effectively boosts linguistic competencies among students who have historically demonstrated low proficiency levels, thereby addressing a significant educational need.

A. Research Question

What are the gains in English proficiency observed from the pretest to the posttest among low-achiever students in the experimental group exposed to Technology-Enhanced Instructions (TEIs) compared to the control group taught with a Traditional Teaching Approach (TTA)?

B. Participants and Sampling

This study sampled 187 students from a larger pool of 734, employing purposive sampling techniques. The participant selection was based on the British Council English Score Test, as validated by Alam and Usama's 2023 study. Only students scoring at the B1 level or below were included. First-semester engineering students aged 19–21 from several areas participated. There were 69 women and 118 men. The study employed the Beg et al.'s (2024) methodological framework to set up the study groups. All students were asked to stand in a queue and count off from 1 to 4. Each student joined a group based on the number they called out. This method randomized students to one of four groups: '1' generated experimental group one, '2' formed experimental group two, '3' formed experimental group three, and '4' formed the control group. Group one underwent Web-Based Learning (WBL), group two BBL, and group three OBL. The control group did not receive any technological interventions aimed at improving English proficiency.

C. Treatments

The duration of the treatment spanned 12 weeks, during which students participated in sessions for 55 minutes each, three days a week.

D. Web-Based Learning

In the web-based learning treatment using Duolingo (www.english-test.duolingo.com), students engaged daily to improve their core skills—vocabulary, grammar, and reading—as well as their listening and writing abilities. The platform provided personalized learning paths, featuring a series of interactive tasks tailored to each student's current level. These tasks were designed to progressively develop core language competencies and included real-time feedback on grammar exercises, comprehensive vocabulary drills, and reading passages followed by comprehension questions. The treatment also incorporated specific listening exercises to enhance auditory skills and interactive writing tasks that offered immediate corrections, ensuring a holistic approach to language learning tailored to individual progress.

E. Blended Learning

In the blended learning approach using Edmodo (www.edmodo.en.softonic.com) alongside traditional classroom methods, students accessed digital instructional content independently outside the classroom while also engaging in weekly face-to-face sessions. The reading comprehension and writing tasks in these in-person sessions were vital to learning. The instructor's role was integral during these sessions, where they provided direct feedback and guided peer collaboration activities. This facilitated a dynamic educational environment where students could discuss their ideas, receive personalized input, and practice their skills interactively. The instructor not only mediated these discussions but also tailored the sessions to address the individual and collective needs of the students, thereby enhancing their reading and writing abilities through a blend of autonomous online learning and active classroom engagement.

F. Purely Online Learning

In the purely online learning modality, Coursera (www.coursera.org) was utilized to deliver courses tailored specifically for English language learning. This approach was comprehensively structured around video lectures, extensive reading materials, and interactive quizzes that catered to various learning needs. A significant emphasis was placed on enhancing listening skills through auditory materials that included a range of accents and dialects, providing students with exposure to diverse linguistic nuances. Additionally, writing was a key component of the curriculum, with students completing assignments that were evaluated through a combination of automated feedback systems and peer reviews. This method allowed for a thorough engagement with the language, as students could learn and refine their skills in an immersive online environment, receiving feedback that helped them progress independently.

G. Traditional Teaching Approach

In the traditional teaching approach, English language learning was conducted in a conventional classroom setting, focusing on direct interaction between the teacher and the students. This method heavily relied on structured lessons involving face-to-face instruction, textbook exercises, and blackboard examples. Teachers gave lectures and led discussions to assist students in understanding and applying the material. The curriculum covered vocabulary, grammar, reading, and writing skills, with a strong emphasis on repetition and practice to reinforce learning. Listening skills were enhanced through in-class listening exercises that included dialogues and passages spoken by the teacher or from audio recordings. Assessments were regularly conducted through written tests and oral presentations, enabling the teacher to provide immediate and personalized feedback to each student, fostering a thorough grasp of the language in a highly interactive and supportive environment.

H. Instruments to Collect Data

To evaluate the effectiveness of the different teaching modalities, the English Score test from the British Council (<https://learnenglish.britishcouncil.org/english-levels/online-english-level-test>) was employed as both a pretest and

posttest for all participants. This assessment instrument evaluated participants' vocabulary, grammar, reading, listening, and writing skills. Both pre-test and post-test scores were meticulously recorded in Excel. Participants in classroom-based tests were provided with headsets with microphones to enhance listening accuracy. This setup allowed for a controlled environment, minimizing external noise and distractions, thus ensuring that the test results accurately reflected each participant's true language abilities.

I. Statistical Analysis of Data

To analyze the data collected from the four groups, each undergoing pretest and posttest assessments, the repeated measures ANOVA was utilized. Our statistical test analyses continuous variables over several periods in the same subjects, making it perfect for our investigation. To assess if English language proficiency changed significantly throughout treatment, repeated measures ANOVA could account for within-group variances and time-group effects. A repeated measures ANOVA could investigate the main effect of time (pretest to posttest) and the interaction between the teaching approach and time on language skills across time. This is crucial for identifying which educational method most effectively enhances language skills. This approach takes into consideration confounding characteristics that are similar between participants but vary across groups, making the intervention's impact on language learning more precise.

IV. RESULTS

A repeated measures ANOVA was conducted to evaluate the effects of various instructional methods—Web-Based Learning (WBL), Blended-Based Learning (BBL), Online-Based Learning (OBL), and a Traditional Teaching Approach (TTA)—on the core linguistic skills (listening, reading, vocabulary, and grammar) of EFL/ESL learners. This study involved four groups (three experimental and one control) and was structured across two testing phases (pretest and posttest).

The analysis demonstrated a statistically significant main effect for language proficiency, with an F-value of 178.474 ($df = 3, 52$), $p < 0.002$, and a partial eta squared of 0.31. These results indicate that variations in core, listening, and writing skills significantly influenced the participants' English language proficiency across different groups and testing periods (refer to Table 1). Additionally, a significant main effect on the group was observed, with an F-value of 13.342 ($df = 3, 56$), $p < 0.004$, and a partial eta squared of 0.424. This finding underscores that learners in each group exhibited distinct patterns of linguistic proficiency, which were influenced by the type of educational interventions administered. Specifically, the first experimental group engaged in web-based learning, the second group in blended-based learning, the third group received purely online learning, and the fourth group was taught using traditional teaching methods. The variation in these intervention types played a significant role in the observed differences in English language proficiency among the groups, demonstrating the impact of these educational interventions on enhancing learners' core, listening, and writing skills. Furthermore, the analysis concerning the testing phases, which included both pretest and posttest, yielded significant results. The ANOVA revealed a substantial main effect for the test phase, with an F-value of 34.932 ($df = 4, 64$), $p < 0.032$, and a partial eta squared of 0.383. This significant finding demonstrated marked differences in the learners' performance between the pretest and posttest, highlighting the efficacy of the interventions throughout the study period. These outcomes suggest that both the instructional feedback and the duration of the intervention played crucial roles in enhancing the linguistic accuracy of the learners' English language proficiency.

Additionally, a significant interaction was observed between language proficiency (core, listening, and writing) and the groups (experimental and control), as indicated by the ANOVA results ($F(5, 58) = 34.877$, $p < 0.002$, $\eta^2 p = 0.657$). Among the groups, experimental group one, which utilized web-based learning, demonstrated the highest improvement in mean scores, as shown in Table 1, highlighting its effectiveness in addressing complex linguistic issues. Following closely was experimental group two, which engaged in blended-based learning, exhibiting consistent improvements across all areas of language proficiency. Experimental group three, which participated in purely online-based learning, showed moderate improvements. In contrast, the control group, which continued with a traditional teaching approach, exhibited the least change, suggesting a more stable but less effective intervention. This sequence from most to least effective in improving mean scores clearly illustrates the varying impact of different educational interventions on enhancing English language skills among EFL/ESL learners. Furthermore, the interaction between language proficiency (core, listening, and writing) and the testing phases (pretest and posttest) demonstrated a statistically marginal effect, evidenced by an F-value of 3.690 ($df = 5, 56$), $P = 0.054$, and a partial eta squared of 0.196. This result suggests that while there were variations in how language proficiency components were addressed across the tests, the differences in English proficiency from pretest to posttest were detectable, albeit not robust. This outcome indicates that while testing phases do impact linguistic accuracy, the pronounced effects may not be solely attributable to the testing process itself but rather to the cumulative effects of the instructional interventions implemented over time. The three-way interaction among language proficiency (core, listening, and writing skills), group types (three experimental and one control group), and test phases (pretest and posttest) was found to be statistically significant, as evidenced by an F-value of 2.536 ($df = 4, 57$), $P = 0.014$, and a partial eta squared of 0.240. This significant interaction underscores the differential impact of the various interventions on language proficiency across different times, illustrating how each type of intervention influenced language proficiency differently from pretest to posttest. This variation in outcomes, as detailed in Table 1, highlights the complex dynamics of how instructional methods affect the development of language skills, emphasizing

that the timing of assessments and the nature of the instructional approach both play critical roles in shaping learning outcomes.

TABLE 1
PRETEST AND POSTTEST SCORES ACROSS DIFFERENT LEARNING MODALITIES

| | Core Skills | | Listening | | Writing | |
|-------------------------------|-------------|------|-----------|------|---------|------|
| | Mean | SE | Mean | SE | Mean | SE |
| Web Based Learning | | | | | | |
| Pretest | 18.83 | 0.52 | 13.85 | 0.32 | 08.50 | 0.93 |
| Posttest | 24.20 | 0.72 | 19.81 | 0.35 | 11.85 | 0.84 |
| Blended Based Learning | | | | | | |
| Pretest | 19.96 | 0.92 | 12.81 | 0.75 | 09.83 | 0.04 |
| Posttest | 22.94 | 0.43 | 16.19 | 0.64 | 10.20 | 0.72 |
| Purely Online Learning | | | | | | |
| Pretest | 16.19 | 0.54 | 14.72 | 0.45 | 06.96 | 0.92 |
| Posttest | 18.93 | 0.24 | 16.72 | 0.64 | 08.94 | 0.43 |
| Traditional Teaching Approach | | | | | | |
| Pretest | 17.54 | 0.24 | 15.70 | 0.42 | 09.19 | 0.54 |
| Posttest | 19.59 | 0.34 | 16.96 | 0.14 | 09.93 | 0.24 |

The comparative analysis of the educational effectiveness across four distinct learning modalities such as Web-Based Learning, Blended Learning, Purely Online Learning, and Traditional Teaching was conducted by examining pretest and posttest scores in core language skills, listening, and writing (Table 1). The Web-Based Learning modality exhibited the most pronounced improvements overall, with students' scores in core skills surging from 18.83 to 24.20, in listening from 13.85 to 19.81, and in writing from 8.50 to 11.85. This modality, leveraging interactive and adaptive online tools, proved highly effective in engaging students and providing immediate feedback, crucial for reinforcing learning. Blended Learning, combining online resources with regular face-to-face sessions, also showed notable gains but to a slightly lesser extent, suggesting that the synergy of digital and traditional methods enriches learning experiences. Meanwhile, Purely Online Learning, despite offering flexibility, showed more moderate improvements, likely due to the absence of real-time teacher interaction, which could hinder more dynamic engagement. Traditional Teaching, relying solely on conventional face-to-face educational methods, resulted in the smallest gains across all categories, underscoring the potential limitations of traditional approaches in the absence of digital enhancements. This analysis underscores the significant impact that technological integration and interactive learning environments have on enhancing language proficiency, with Web-Based Learning standing out as the most effective modality in this study.

V. DISCUSSION

The study's findings revealed that various technological instructional impacted EFL/ESL learners' core (reading, vocabulary, and grammar), listening, and writing skills differently, highlighting significant variations in language proficiency improvements. Web-based learning stood out as the most effective method, significantly enhancing the language proficiency of low achievers, while Blended-Based Learning showed notable improvements across all language areas. In contrast, Online-Based Learning and Traditional Teaching approaches resulted in modest gains, with the traditional methods demonstrating the least effectiveness, pointing to their limitations compared to technology-enhanced environments.

Web-based learning (WBL) has proven particularly effective for EFL/ESL learners with low language proficiency, demonstrating substantial advantages that can be understood through various educational theories. Notably, WBL's success aligns with Long's Interaction Hypothesis (1983), which emphasizes the importance of meaningful interaction in language learning. WBL platforms provide ample opportunities for both synchronous and asynchronous interactions, allowing low-achieving learners to engage with content and peers at their own pace. This flexibility is crucial for learners who may need more time to process and understand new information, as it enables them to negotiate meaning and practice language use in a supportive, stress-free environment. Additionally, Sweller's (1988) cognitive load theory supports the effectiveness of WBL by highlighting the importance of reducing cognitive overload to enhance learning efficiency. WBL aids in managing cognitive load effectively by incorporating multimedia elements that integrate visual and auditory information. This integration helps to distribute cognitive demands more evenly, making language learning more manageable and less intimidating for learners struggling with language basics. Furthermore, Mayer's (2001) cognitive theory of multimedia learning provides a theoretical framework that underscores the benefits of WBL for low achievers. According to Mayer, learning is optimized when information is presented through both verbal and visual means. WBL uses this multimodal approach extensively by including videos, interactive simulations, and graphics, which can significantly boost the comprehension and retention of language concepts. This type of rich, multimedia-enhanced environment is particularly beneficial for low achievers, as it provides multiple pathways for understanding and internalizing new language skills, thereby accommodating various learning preferences and needs.

Contrasting this with the limitations observed in purely Online-Based Learning and Traditional Teaching approaches, which might lack such rich interactive and multimodal capabilities, the superior performance of WBL becomes evident. While traditional methods often rely heavily on text-based or oral transmission of information, lacking the immediacy and engagement of interactive digital tools, and purely online methods may not provide real-time feedback or peer interaction necessary for practical language use, WBL creates a dynamic learning environment that closely mirrors real-world language use scenarios.

The Web-Based Learning (WBL) in enhancing EFL/ESL learners' language proficiency resonates with a robust body of scholarly work that underscores the transformative potential of digital environments in language education. Hockly's (2018) research emphasizes how interactive digital tools are essential for creating immersive learning experiences that facilitate effective language acquisition, a notion that is widely supported in the field. For instance, Blake (2013) highlights the dynamic capabilities of digital tools in providing rich, contextualized language learning scenarios that surpass traditional methods in both scope and engagement. Further evidence supporting the efficacy of WBL comes from the work of Stockwell and Hubbard (2013), who argue that technology not only expands access to linguistic resources but significantly enhances learner engagement through interactive and multimedia content. This engagement is critical for language learning, as it increases exposure to the language and provides practical, real-world applications of language skills (Godwin-Jones, 2018). Moreover, the aspect of personalized learning paths in WBL (Kebritchi et al., 2017), aligns with findings from Means et al. (2013) and Alam et al. (2024), who report that technology-based instruction tailored to learner needs significantly boosts educational outcomes. Warschauer (2010) further elaborates on this, noting that technology allows for differentiated instruction that can be highly beneficial in EFL/ESL contexts by accommodating diverse learner profiles. The role of immediate feedback in WBL is another critical component. Bax (2011) emphasized how immediate, corrective feedback in digital platforms can aid language learners in adjusting their learning strategies and correcting errors on the fly, which is pivotal for effective language learning. This continuous loop of feedback and adjustment is essential for building proficiency and confidence in a new language.

The integration of WBL in language education offers a robust approach that effectively utilizes the advantages of digital technology to foster a more engaging, interactive, and cognitively aligned learning environment. This not only makes it more effective than other methods reviewed but also more suited to meeting the diverse needs and learning styles of today's ESL learners.

VI. CONCLUSION

The study's comprehensive analysis revealed that Web-Based Learning (WBL) significantly outperformed other instructional methods in enhancing language proficiency among low-proficiency EFL/ESL learners. This highlights the requirement for innovative and adaptable learning environments that accommodate the demands of all learners, including those who struggle with conventional methods. The effectiveness of WBL can be attributed to its alignment with Long's Interaction Hypothesis (1983), which emphasizes the necessity of meaningful interaction in language acquisition. WBL facilitates this through both synchronous and asynchronous communication, providing a dynamic platform for learners to engage with material at their own pace. Additionally, Mayer's Cognitive Theory of Multimedia Learning (2001) supports the use of multimedia in WBL, which integrates visual and auditory information to enhance understanding and retention. This approach not only supports cognitive development but also caters to various learning preferences, thereby reducing cognitive load and making language learning more accessible. While Online-Based Learning and Traditional Teaching approaches provided some benefits, they did not achieve the same level of effectiveness as WBL. These methods lacked the robust interactive components and the flexibility that WBL offers, which are critical for engaging learners with lower initial language proficiency. The modest gains observed in these methods highlight the need for more interactive and technologically integrated teaching approaches in language education.

The findings from this study advocate the incorporation of Web-Based Learning frameworks in EFL/ESL curricula to better support low achievers. Instructors and curriculum designers should embrace technology to make learning more dynamic and personalized. This approach not only meets the educational needs of today's diverse learner population but also enhances the overall efficacy of language teaching practices. Future studies should explore the long-term impacts of WBL and other technological instructional methods on various learner demographics to determine their effectiveness over extended periods. Additionally, research could investigate how these methods can be further optimized to support not just low achievers but also learners with varying degrees of proficiency to ensure comprehensive educational support.

This study demonstrates that technology is crucial to modern education, especially for the English language ability of ESL learners. As educational landscapes continue to evolve, leveraging technology in education becomes increasingly essential for meeting the complex demands of global higher education environments.

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