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Integrating Digital Literacy-Based Instruction in English Language Teaching: Emperical Evidence of Students' Language Competence and Cognitive Development

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ABSTRACT

Digital transformation has created new opportunities for English language teaching by enabling learners to engage with authentic, multimodal, and interactive learning environments. This study aims to investigate how digital literacy-based instruction influences junior high school students' English language competence and cognitive development. A qualitative research design with an interpretive approach was employed involving 33 EFL learners from Indonesia, Nepal, and Zimbabwe. Data were collected through semi-structured interviews and classroom observations, and analyzed using the interactive model of data condensation, data display, and conclusion verification. The findings revealed that digital literacy-based instruction enhanced students' listening, speaking, reading, and writing competence by providing greater exposure to authentic English resources and opportunities for meaningful communication. Furthermore, digital learning activities contributed to students' cognitive development by promoting critical thinking, creativity, problem solving, and metacognitive engagement. Students became more capable of evaluating information, generating ideas, collaborating with peers, and reflecting on their learning processes. The study concludes that digital literacy-based instruction functions not only as a technological intervention but also as a comprehensive pedagogical framework that integrates language learning and higher-order thinking development. The findings highlight the importance of designing digitally supported English instruction aligned with pedagogical objectives and learners' contextual needs.

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INTRODUCTION

The rapid transformation of digital technologies has reshaped the landscape of English language teaching (ELT), shifting instructional practices from conventional textbook-oriented approaches toward more interactive, multimodal, and learner-centered environments. In this context, digital literacy-based instruction has emerged as an important pedagogical orientation that extends beyond students' ability to operate

technological devices. It involves the capacity to access, interpret, evaluate, create, and communicate information effectively and responsibly through digital platforms (Dewi et al., 2023; Meniado, 2026; Mustofa et al., 2023). Within English language classrooms, digital literacy provides opportunities for students to engage with authentic linguistic resources, including digital texts, podcasts, videos, online dictionaries, interactive applications, and virtual communication platforms. These resources expand students' exposure to English beyond classroom boundaries and encourage meaningful language use through authentic communicative activities.

Furthermore, digital literacy-based instruction supports collaborative and differentiated learning by enabling students with diverse proficiency levels to participate in learning activities, receive feedback, and construct knowledge through digital tasks (Dewi et al., 2023; Yu et al., 2024). Recent studies highlight that digital storytelling (DST) and digital multimodal composing (DMC) are effective approaches for implementing multiliteracies pedagogy because they allow students to construct meaning through multiple semiotic resources, such as language, images, audio, and video, while engaging in authentic communication practices (Dewi et al., 2023; Mandarani & Megawati, 2024; Wang, 2024; Yu et al., 2024). However, the effectiveness of digital integration depends not only on the availability of technology but also on the alignment between technological affordances, pedagogical strategies, and learning objectives, as emphasized by technology integration frameworks such as TPACK, SAMR, and PICRAT (Antari et al., 2023; Jabsheh, 2024; Mandarani & Megawati, 2024).

At the junior high school level, improving English language competence remains a significant educational challenge, particularly in contexts where English functions as a foreign or additional language. Language competence encompasses students' abilities in listening, speaking, reading, and writing, which are essential for academic achievement and participation in global communication. In Indonesia, English is primarily taught as a foreign language, yet many students continue to experience difficulties in vocabulary development, grammatical accuracy, reading comprehension, and oral communication due to limited opportunities for meaningful English use outside formal classroom settings. Similar challenges are evident in Nepal, where English has a strong position in education but students' opportunities to develop proficiency are influenced by geographical conditions, school resources, socioeconomic differences, and diverse linguistic backgrounds. Consequently, learners often demonstrate uneven development across language skills despite years of formal instruction. In Zimbabwe, English occupies an important role as a language of schooling and academic communication within a multilingual society, creating challenges for students who must negotiate between indigenous languages used in daily life and the academic English required in educational contexts. These shared challenges indicate that the central issue is not merely students' exposure to English instruction but the extent to which classrooms provide opportunities for authentic communication, contextualized language practice, and meaningful interaction (Azizah & Triastuti, 2024; Dewi et al., 2023; Faudi et al., 2023). Therefore, digitally supported English instruction that incorporates authentic materials, multimodal communication, and learner-centered activities may provide an alternative pathway for strengthening language competence among junior high school learners across diverse educational contexts.

Beyond linguistic development, English language learning should also contribute to students' cognitive development by fostering higher-order thinking abilities, including analysis, evaluation, creativity, problem solving, reflection, and metacognitive regulation. Adolescence represents a critical developmental stage in which learners gradually acquire the ability to interpret complex information, evaluate different perspectives, construct

arguments, and apply knowledge in unfamiliar situations. Nevertheless, English classrooms in many educational settings, including Indonesia, Nepal, and Zimbabwe, may still be characterized by examination-oriented practices, teacher-centered instruction, and learning activities that prioritize vocabulary memorization and grammatical accuracy rather than cognitive engagement. Such practices can limit students' opportunities to develop critical and creative thinking skills required in contemporary education (Jiang & Hafner, 2024; Kim et al., 2025).

Digital literacy-based instruction provides potential solutions to this challenge because digital environments naturally require students to search, analyze, evaluate, synthesize, and communicate information. Activities such as interpreting multimodal texts, evaluating online sources, producing digital stories, creating multimedia presentations, and participating in collaborative digital projects require students to simultaneously use language skills and engage in cognitive processes. Research indicates that digital storytelling and digital multimodal composing can support critical literacy, knowledge construction, and reflective thinking by positioning students as active creators of meaning rather than passive recipients of information (Chubko et al., 2020; Dewi et al., 2023; Wang & Tengyao, 2023; Yu et al., 2024). Thus, integrating digital literacy into ELT has the potential to transform English classrooms into environments where language learning and cognitive development occur simultaneously.

Although previous studies have demonstrated the benefits of digital literacy, multiliteracies, and multimodal learning in English education, several limitations remain. First, existing research has predominantly examined digital literacy implementation within specific national or institutional contexts, resulting in limited understanding of how such approaches address diverse educational realities across developing contexts. Comparative perspectives involving Indonesia, Nepal, and Zimbabwe remain insufficiently explored, despite these contexts sharing similar challenges related to multilingualism, unequal technological access, and the need to strengthen English proficiency. Second, many studies emphasize technological adoption and language outcomes but provide limited explanation of how digital literacy-based instruction simultaneously influences language competence and cognitive development. Third, assessment of digital literacy-based ELT remains challenging because effective evaluation requires integration of linguistic performance, digital competencies, critical thinking, and multimodal communication abilities (Meniado, 2026; Mustofa et al., 2023; Yap & Gurney, 2023). These gaps indicate the need for a more comprehensive investigation of digital literacy-based instruction as a pedagogical framework rather than merely a technological intervention.

Therefore, this study aims to investigate the role of digital literacy-based instruction in English language teaching for improving junior high school students' language competence and cognitive development. The novelty of this research lies in developing an integrated perspective that positions digital literacy not only as a technological skill but as a pedagogical approach that connects multimodal communication, language development, and higher-order thinking within diverse educational contexts. Unlike previous studies that primarily examine digital tools or isolated language outcomes, this study conceptualizes digital literacy-based instruction as a holistic learning framework that enables students to access, evaluate, create, and communicate knowledge through English while simultaneously developing cognitive capabilities.

Based on this rationale, the objectives of this study are to (1) analyze how digital literacy-based instruction contributes to the development of junior high school students' English language competence and (2) examine how digital literacy-based instruction supports students' cognitive development through meaningful, multimodal, and

cognitively demanding learning activities. Accordingly, this study addresses the following research questions:

How does digital literacy-based instruction influence junior high school students' English language competence in terms of listening, speaking, reading, and writing skills?

How does digital literacy-based instruction contribute to students' cognitive development, particularly in critical thinking, creativity, problem solving, and metacognitive engagement in English language learning?

RESEARCH METHOD

Research Design

This study employed a qualitative research design using an interpretive approach to explore how digital literacy-based instruction contributes to English language competence and cognitive development among junior high school English as a Foreign Language (EFL) learners. A qualitative design was selected because the objectives of the study were not limited to measuring learning outcomes numerically but aimed to understand learners' experiences, perceptions, learning processes, and contextual factors influencing the implementation of digital literacy-based instruction. Qualitative inquiry is particularly appropriate when researchers seek to investigate complex educational phenomena involving interactions between learners, teachers, instructional practices, and technological environments (Creswell & Poth, 2018).

The selection of this design was based on the nature of the research questions, which focused on how and in what ways digital literacy-based instruction supports students' language competence and cognitive development. Through qualitative exploration, the study was able to capture detailed accounts of students' engagement with digital resources, their experiences in completing multimodal English learning activities, and their cognitive processes when accessing, evaluating, and producing digital information. This approach allowed the researchers to examine not only observable learning behaviors but also students' interpretations of how digital learning environments influenced their communication skills, creativity, critical thinking, and problem-solving abilities.

The qualitative design was implemented through two complementary data collection strategies: semi-structured interviews and classroom observations. Interviews provided insights into students' perceptions, experiences, challenges, and reflections regarding digital literacy-based English learning, whereas observations enabled researchers to examine actual classroom practices, learner interactions, participation patterns, and the use of digital resources during learning activities. Combining these methods supported methodological triangulation and provided a more comprehensive understanding of the phenomenon under investigation.

Despite its suitability, qualitative research has several potential limitations. First, findings are context-dependent and may not be statistically generalized to all EFL learners. Second, participants' responses may be influenced by social desirability bias, particularly when discussing their learning experiences or technological abilities. Third, researcher interpretation may introduce subjectivity during data analysis. To address these limitations, this study applied several strategies to enhance research rigor, including methodological triangulation, systematic coding procedures, member checking, and maintaining an audit trail throughout the research process. These procedures were applied to ensure that interpretations were grounded in participants' experiences rather than researchers' assumptions.

Research Participants

The participants of this study consisted of 33 EFL learners enrolled in middle-level classes from three educational contexts: Indonesia, Nepal, and Zimbabwe. The selection of participants from these three countries was based on their shared characteristics as multilingual contexts where English functions primarily as an additional language and where schools experience similar challenges related to English proficiency development, digital access, and technology-supported learning implementation.

The participants were selected using purposive sampling, which is commonly used in qualitative research to identify individuals who possess relevant experiences related to the phenomenon being investigated (Creswell & Poth, 2018). The inclusion criteria were: (1) students enrolled in junior high or equivalent middle-level education; (2) students who had participated in English learning activities incorporating digital resources, such as online platforms, digital texts, videos, multimedia materials, or collaborative digital tasks; (3) students who were willing to participate voluntarily; and (4) students who were able to provide meaningful reflections regarding their learning experiences.

Table 1. The Participant Distribution of Learners Representing the Three National Contexts

Country	**Number of Participants**	**Educational Context**
Indonesia	11 learners	Junior high school EFL learners
Nepal	11 learners	Middle-level English learners
Zimbabwe	11 learners	Secondary school EFL learners
Total	**33 learners**	

The participants represented diverse demographic backgrounds in terms of gender, learning experiences, and exposure to digital technologies. Their ages ranged approximately from 13 to 16 years old, representing the adolescent developmental stage in which students increasingly develop analytical thinking, independent learning abilities, and digital interaction skills. Participation was voluntary, and ethical considerations were maintained through informed consent procedures, confidentiality protection, and anonymization of participant identities.

Instruments and Data Collection Technique

Two qualitative instruments were employed in this study: semi-structured interviews and classroom observation protocols. These instruments were developed based on the theoretical framework of digital literacy-based instruction, multiliteracies pedagogy, and cognitive development in language learning. The interview protocol was developed to explore students' experiences, perceptions, and reflections regarding digital literacy-based English learning. The questions were organized around four major dimensions: *Digital learning experiences*, including students' use of digital resources, online platforms, and multimedia materials during English lessons; *Language competence development*, including perceived improvements in vocabulary, communication skills, reading comprehension, writing ability, and confidence in using English; *Cognitive development*, including students' experiences in analyzing information, solving problems, evaluating digital content, generating ideas, and reflecting on learning processes; and *Challenges and opportunities*, including technological barriers, learning difficulties, and students' recommendations for improving digital literacy-based instruction.

The interview questions were designed using open-ended formats to encourage participants to provide detailed explanations rather than short responses. Prior to data collection, the interview protocol was reviewed by two experts in English language education and educational technology to examine content relevance, clarity, and alignment with the research objectives. Feedback from experts was incorporated to improve question formulation and reduce ambiguity. Classroom observation was

conducted to examine the actual implementation of digital literacy-based instruction and students' learning behaviors. The observation protocol focused on several indicators: students' interaction with digital learning resources; participation in multimodal learning activities; collaboration and communication during digital tasks; evidence of language use through speaking, writing, reading, and listening activities; cognitive engagement, including questioning, analysis, evaluation, creativity, and problem-solving.

The observation instrument was adapted from previous studies examining digital literacy practices and multiliteracies-based English instruction (Dewi et al., 2023; Mandarani & Megawati, 2024; Yu et al., 2024). To strengthen validity, the observation indicators were reviewed by educational experts, and pilot observations were conducted to ensure that the categories were observable and aligned with classroom realities. The reliability of qualitative instruments was strengthened through researcher training, consistent observation procedures, and comparison between interview findings and classroom observations. Agreement among researchers during coding and interpretation was also considered to minimize individual interpretation bias.

Data Analysis

Qualitative data analysis followed the interactive model proposed by Miles, Huberman, and Saldaña (2014), consisting of three interconnected processes: data condensation, data display, and conclusion drawing/verification. The first stage involved organizing and reducing the collected data through transcription, selection, coding, and categorization. Interview recordings were transcribed verbatim, while observation notes were systematically organized according to the research objectives. The researchers conducted initial coding to identify meaningful segments related to digital literacy practices, language competence development, and cognitive engagement.

The coding process involved both deductive and inductive approaches. Deductive codes were developed from the theoretical framework, including digital literacy, multimodal learning, communication skills, critical thinking, creativity, and problem solving. Meanwhile, inductive coding allowed new themes to emerge from participants' experiences. Similar codes were grouped into broader categories to identify patterns across the three national contexts. The second stage involved presenting condensed data in organized formats, including thematic matrices, comparison tables, and conceptual maps. Data displays were used to identify similarities and differences among participants from Indonesia, Nepal, and Zimbabwe. This process enabled researchers to examine how digital literacy-based instruction influenced language learning experiences across different educational contexts.

The data display process also supported triangulation by comparing interview findings with classroom observation evidence. For example, students' reported improvements in communication skills were compared with observed classroom behaviors, such as participation in discussions, digital presentations, and collaborative tasks. The final stage involved identifying major themes, interpreting relationships among categories, and developing conclusions based on the evidence. Conclusions were continuously verified by revisiting the coded data, comparing findings across participants and countries, and conducting member checking with selected participants to confirm the accuracy of interpretations.

FINDINGS AND DISCUSSION

Research Findings

How does digital literacy-based instruction influence junior high school students' English language competence in terms of listening, speaking, reading, and writing skills?

The findings indicate that digital literacy-based instruction positively influenced students' English language competence by increasing exposure to authentic language input, encouraging meaningful communication, and providing opportunities for students to practice productive and receptive language skills. Classroom observations revealed that digital resources such as videos, podcasts, online texts, digital storytelling platforms, and collaborative applications created more opportunities for students to interact with English in contextual situations rather than only through textbook exercises.

Regarding listening competence, students reported that exposure to authentic digital materials, particularly English videos, podcasts, and online conversations, improved their ability to recognize pronunciation, vocabulary use, and different forms of spoken English. Students explained that repeated access to audio-visual materials allowed them to listen at their own pace and gradually develop confidence in understanding spoken English. It is in line with the results of interview who stated: Listening Development (Indonesia Participant): "*Before using videos in English lessons, I only listened to the teacher. Now I can hear different pronunciations from native speakers and understand more words*." For speaking competence, digital literacy-based activities encouraged students to communicate through presentations, digital storytelling, and collaborative online tasks. Observation data showed that students became more willing to express ideas in English because digital tasks provided structured contexts for communication. Students also indicated that preparing digital content reduced anxiety because they could practice and revise their language before presenting their work. *Excerpt 2 – Speaking Development (Nepal Participant): "When we make digital presentations, I practice many times before presenting. It makes me more confident to speak English in front of my classmates."*

In terms of reading competence, digital literacy instruction expanded students' access to various English texts, including online articles, multimedia resources, and educational websites. Students demonstrated improved ability to identify main ideas, interpret information, and compare different digital sources. This finding supports previous studies showing that multimodal digital resources strengthen reading engagement and comprehension by connecting language learning with authentic contexts. *Excerpt 3 – Reading Development (Zimbabwe Participant): "Online articles help me learn new vocabulary because I can read different topics, not only the texts in our textbook."* Regarding writing competence, digital platforms encouraged students to produce meaningful written products, including digital stories, captions, reports, and multimedia presentations. Students perceived writing activities as more purposeful because their work was not only submitted to teachers but also designed for communication with wider audiences. *Excerpt 4 – Writing Development (Indonesia Participant): "Writing digital stories is more interesting because we can combine pictures, videos, and words. I think more about how to write correctly*." This experience encouraged greater attention to vocabulary selection, sentence structure, and organization of ideas.

In addition, digital literacy-based instruction transformed English learning from a passive process into an interactive communication experience. Students were not only learning language forms but also using English as a tool for accessing, creating, and sharing information.

Table 1. The Influence of Digital Literacy-Based Instruction on Students' English Language Competence

Language Competence Dimension	Emerging Themes from Interviews and Observations	Evidence from Participants	Interpretation

Language Competence Dimension	Emerging Themes from Interviews and Observations	Evidence from Participants	Interpretation
Listening	Increased exposure to authentic spoken English through videos and podcasts	Students reported improved pronunciation recognition and vocabulary understanding	Digital audio-visual resources enhanced meaningful language input
Speaking	Increased confidence through digital presentations and storytelling activities	Students became more willing to communicate ideas in English	Digital tasks reduced speaking anxiety and encouraged interaction
Reading	Improved ability to interpret online texts and multimodal information	Students used websites, articles, and digital resources for learning	Digital environments expanded reading materials beyond textbooks
Writing	Increased motivation to create digital texts and multimedia products	Students revised writing before publishing or presenting	Digital composition encouraged purposeful writing practices

Table 1 illustrates that digital literacy-based instruction contributed positively to the development of junior high school students' English language competence across four major dimensions: listening, speaking, reading, and writing. The findings indicate that digital learning environments expanded students' access to authentic English input and created more meaningful opportunities for language practice. In terms of listening competence, the integration of digital resources such as videos, podcasts, and online audio materials enabled students to encounter various accents, pronunciation patterns, and contextual expressions that were rarely available through conventional classroom materials. Students' responses indicated that repeated exposure to authentic digital content supported their ability to recognize spoken English and improve vocabulary comprehension. This finding suggests that digital literacy-based instruction provides richer linguistic exposure by allowing learners to interact with English beyond the limitations of classroom-based oral practice.

The table also demonstrates that digital literacy-based instruction strengthened productive language skills, particularly speaking and writing, by positioning students as active users and creators of English. Digital presentations, storytelling projects, and multimedia assignments encouraged students to communicate ideas more confidently because they had opportunities to plan, revise, and refine their language before sharing their work. Similarly, the use of digital texts and multimodal composition activities supported students' reading and writing development by requiring them to interpret online information, organize ideas, and produce meaningful written outputs. These findings confirm that digital literacy-based instruction does not simply provide technological support but creates authentic communicative contexts where students apply English for real purposes. Therefore, digital literacy functions as a bridge between language learning and practical communication, enabling learners to develop linguistic competence through active engagement with diverse digital resources.

How does digital literacy-based instruction contribute to students' cognitive development, particularly in critical thinking, creativity, problem solving, and metacognitive engagement in English language learning?

The findings demonstrate that digital literacy-based instruction contributed significantly to students' cognitive development by creating learning situations that

required analysis, evaluation, creativity, decision-making, and reflection. Classroom observations showed that students were engaged in activities requiring them to search for information, evaluate digital sources, construct arguments, and produce original digital content.

Regarding critical thinking, students demonstrated improved abilities to evaluate information obtained from digital sources. Instead of accepting information directly, learners were encouraged to compare sources, identify relevant information, and justify their opinions. Digital literacy activities required students to consider whether online information was accurate and appropriate for their learning tasks. *Excerpt 1 – Critical Thinking (Nepal Participant): "When we search information online, our teacher asks us to check different websites. We learn that not everything on the internet is correct."*

For creativity development, digital storytelling and multimodal composition activities provided students with opportunities to generate original ideas and express knowledge through various forms, including text, images, audio, and video. Students explained that digital projects allowed them to explore personal ideas and present information in creative ways. *Excerpt 2 – Creativity (Zimbabwe Participant): "Making digital stories gives us freedom to choose pictures, sounds, and words. We can show our own ideas."*

In relation to problem-solving skills, students experienced situations requiring them to overcome challenges related to technology use, language selection, teamwork, and content organization. Collaborative digital activities encouraged students to negotiate solutions and make decisions collectively. Excerpt 3 – Problem Solving (Indonesia Participant): *"Sometimes we have problems with applications or teamwork, but we discuss and find solutions together."*

The findings also indicate improvements in metacognitive engagement. Students became more aware of their learning processes by planning digital projects, monitoring progress, revising language use, and reflecting on final products. Several students reported that digital tasks encouraged them to evaluate their own weaknesses and identify strategies for improvement. *Excerpt 4 – Metacognitive Engagement (Nepal Participant): "After finishing the project, I look at my mistakes and improve my English. I know what I need to learn more.*"

These findings support the argument that digital literacy-based instruction functions not merely as a technological intervention but as a cognitive learning framework. By engaging students in authentic digital tasks, English learning becomes a process of inquiry, reflection, knowledge construction, and communication.

Table 2. Contribution of Digital Literacy-Based Instruction to Students' Cognitive Development

Cognitive Dimension	Emerging Themes from Interviews and Observations	Evidence from Participants	Interpretation
Critical Thinking	Evaluating online information and comparing different sources	Students explained reasons for selecting reliable information	Digital tasks encouraged analysis and evaluation
Creativity	Producing digital stories, videos, and multimedia presentations	Students created original content using multiple media formats	Multimodal activities stimulated creative expression
Problem Solving	Managing technological and learning challenges collaboratively	Students discussed strategies for completing digital projects	Digital tasks promoted decision-making and solution development
Metacognitive Engagement	Planning, monitoring, and reflecting on learning processes	Students evaluated their own progress and revised their work	Digital activities strengthened self-regulated learning

Table 2 presents the contribution of digital literacy-based instruction to students' cognitive development through four dimensions: critical thinking, creativity, problem solving, and metacognitive engagement. The findings reveal that digital learning activities encouraged students to move beyond passive information consumption toward active knowledge construction. In relation to critical thinking, students demonstrated increased awareness of the need to evaluate, compare, and verify information obtained from digital sources. Classroom observations showed that learners were required to analyze online materials, identify relevant information, and justify their choices when completing English learning tasks. Such activities promoted deeper cognitive processing because students were not only practicing language skills but also developing the ability to interpret and evaluate information critically. This finding highlights the importance of designing digital literacy activities that integrate inquiry and reflection rather than focusing only on the use of technological tools.

Furthermore, Table 2 indicates that digital literacy-based instruction supported students' creativity, problem-solving abilities, and metacognitive engagement through authentic and collaborative learning experiences. Digital storytelling, multimedia presentations, and collaborative projects provided opportunities for students to generate original ideas, experiment with different forms of expression, and combine linguistic and visual elements to communicate meaning. Students also encountered technological and communicative challenges that required them to negotiate solutions, collaborate with peers, and make decisions during the learning process. In addition, reflective activities associated with digital projects encouraged students to evaluate their own performance, identify weaknesses, and consider strategies for improvement. These findings suggest that digital literacy-based instruction contributes to cognitive development by creating learning environments where students actively plan, monitor, evaluate, and transform knowledge. Thus, digital literacy-based English learning represents not only an approach for improving language proficiency but also a framework for cultivating higher-order thinking skills required in contemporary education.

Discussion

The findings of this study demonstrate that digital literacy-based instruction provides meaningful support for improving junior high school students' English language competence by increasing exposure to authentic language resources, facilitating communication, and encouraging active engagement with English learning materials. The results confirm previous research emphasizing that digital literacy in English language teaching should not be understood merely as the ability to operate digital devices but as the capacity to access, interpret, evaluate, create, and communicate information through digital environments (Dewi et al., 2023; Meniado, 2026; Mustofa et al., 2023). In the present study, students reported that digital resources, including videos, podcasts, online texts, digital storytelling platforms, and collaborative applications, provided richer opportunities to interact with English compared with conventional textbook-based instruction. This finding is consistent with Dewi et al. (2023), who found that integrating multiliteracies pedagogy through digital storytelling enhanced EFL students' speaking engagement by providing authentic communicative contexts. Similarly, Yu et al. (2024) reported that digital multimodal composition supports second language development because learners interact with multiple forms of meaning-making, including linguistic, visual, and auditory resources. The present study extends these findings by demonstrating that the benefits of digital literacy-based instruction are not limited to specific language

skills or classroom contexts but can be observed across listening, speaking, reading, and writing among learners from three different multilingual educational settings.

The improvement in listening competence observed in this study reflects the value of authentic digital input in expanding students' linguistic exposure. Participants indicated that repeated engagement with English videos, podcasts, and online conversations improved their ability to recognize pronunciation patterns, vocabulary usage, and spoken expressions. This finding supports previous studies suggesting that multimedia resources provide learners with greater access to authentic language models and facilitate comprehension through combined visual and auditory representation (Liang & Yao, 2023; Yu et al., 2024). Unlike traditional listening activities that are often limited to classroom recordings, digital resources allow learners to access diverse English varieties and practice independently according to their learning pace. This aspect is particularly relevant in Indonesia, Nepal, and Zimbabwe, where opportunities for English exposure outside formal education may vary because English is primarily learned as an additional language. Therefore, digital literacy-based instruction contributes to reducing limitations associated with restricted English input by creating extended learning spaces beyond the classroom.

The findings regarding speaking and writing competence further support the argument that digital literacy transforms students from passive receivers of language knowledge into active producers of meaning. The study found that digital presentations, storytelling activities, and multimedia assignments increased students' confidence in expressing ideas because learners had opportunities to prepare, revise, and refine their language before communication. These findings correspond with Mandarani and Megawati (2024), who argued that digital narratives provide meaningful opportunities for students to engage in creative language production through multimodal expression. Similarly, Chubko et al. (2020) demonstrated that digital storytelling can enhance disciplinary literacy among EFL learners by requiring students to organize information, construct messages, and communicate ideas through digital formats. The present study extends this body of research by showing that digital composition activities also influence students' writing motivation because learners perceive their written products as meaningful communication rather than merely classroom assignments. The use of digital platforms encouraged students to consider vocabulary selection, sentence organization, and audience awareness when producing English texts.

The findings also provide evidence that digital literacy-based instruction contributes to students' cognitive development by encouraging higher-order thinking processes. Students were engaged in activities requiring them to search for information, evaluate digital sources, construct arguments, and create original digital products. These findings confirm previous research highlighting that digital multimodal composing supports critical literacy and knowledge construction because learners must analyze information and make decisions regarding how meaning is represented across different modes (Jiang & Hafner, 2024; Wang & Tengyao, 2023). In particular, the development of critical thinking identified in this study demonstrates that digital literacy activities encouraged students to question the credibility of online information rather than simply consume digital content. Students reported that they learned to compare sources and determine whether information was reliable. This finding extends earlier research by emphasizing that digital literacy-based ELT can function as a form of critical pedagogy, where language learning becomes connected with information evaluation and responsible digital participation.

The development of creativity, problem solving, and metacognitive engagement observed in this study also aligns with previous studies on multiliteracies and multimodal learning. Digital storytelling and multimedia composition activities allowed students to combine linguistic, visual, and technological resources to create original products. This

finding supports Kim et al. (2025), who emphasized that multiliteracies pedagogy positions learners as designers of knowledge rather than passive recipients of information. Furthermore, students' experiences in solving technological difficulties, organizing content, and collaborating with peers demonstrate that digital tasks naturally create problem-solving situations. These results are consistent with Oakley et al. (2023), who found that multimodal digital exchange projects promote learner autonomy and collaborative problem solving. However, the present study contributes additional insight by showing how these processes occur specifically within EFL learning environments where students simultaneously negotiate language development and digital production.

Another important contribution of this study concerns metacognitive engagement. Students reported that digital projects encouraged them to plan activities, monitor progress, revise language use, and evaluate their final products. This finding supports the view that digital literacy-based instruction promotes self-regulated learning because students become responsible for managing their learning processes. Previous studies have emphasized the importance of reflective practices in digital learning environments, particularly when students engage in digital multimodal composing (Wang, 2024; Yu et al., 2024). The current findings extend this perspective by demonstrating that metacognitive development can occur naturally through digital English tasks when students are required to make decisions, revise their work, and reflect on improvement.

Nevertheless, the findings should also be interpreted within contextual limitations. Previous research has highlighted that successful digital integration depends on teacher competence, infrastructure availability, and alignment between technology and pedagogy (Antari et al., 2023; Jabsheh, 2024). Although the present study identified positive outcomes across Indonesia, Nepal, and Zimbabwe, differences in digital access, teacher readiness, and institutional support may influence the sustainability of digital literacy-based instruction. Therefore, digital technology should not be considered an automatic solution for improving English education. Instead, it should be integrated through theoretically informed approaches such as TPACK, SAMR, and PICRAT to ensure that technological tools serve pedagogical purposes rather than replace effective teaching practices (Antari et al., 2023; Jabsheh, 2024).

This study contributes to existing knowledge by positioning digital literacy-based instruction as a comprehensive pedagogical framework that simultaneously develops English competence and cognitive abilities. Previous studies have often examined digital storytelling, multimodal composition, or technology integration separately; however, the current research demonstrates their interconnected role in supporting language development, critical thinking, creativity, problem solving, and self-regulated learning. The cross-context perspective involving Indonesia, Nepal, and Zimbabwe further strengthens the contribution of this study by illustrating how digital literacy-based ELT can address shared challenges among multilingual EFL learners while remaining adaptable to diverse educational environments.

CONCLUSIONS

This study concludes that digital literacy-based instruction represents an effective pedagogical approach for enhancing junior high school students' English language competence and cognitive development. The findings demonstrate that digital literacy-based learning environments provide students with expanded opportunities to engage with authentic English resources, practice communication skills, and produce meaningful digital content. Through the integration of videos, podcasts, digital texts, storytelling platforms, and multimedia projects, students experienced improvements in listening, speaking, reading, and writing abilities. Digital literacy-based instruction therefore extends

English learning beyond traditional classroom boundaries by transforming students into active users and creators of language. The findings further indicate that digital literacy should be conceptualized not merely as technological proficiency but as a learning framework that integrates communication, creativity, collaboration, and meaningful knowledge construction.

Furthermore, this study concludes that digital literacy-based instruction contributes significantly to students' higher-order cognitive development. Through digital inquiry, multimodal composition, and collaborative activities, students developed critical thinking, creativity, problem-solving abilities, and metacognitive awareness. The novelty of this study lies in demonstrating the integrated relationship between digital literacy, language competence, and cognitive development across three multilingual EFL contexts: Indonesia, Nepal, and Zimbabwe. The findings suggest that effective digital literacy-based ELT requires intentional instructional design, teacher readiness, and alignment between technology, pedagogy, and learning objectives. Therefore, digital literacy-based instruction can serve as a sustainable framework for preparing EFL learners to communicate effectively, evaluate information critically, and participate responsibly in contemporary digital societies.

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DECLARATION OF USING AI TOOLS

The authors declare that artificial intelligence (AI) tools were used responsibly during the preparation of this manuscript, particularly for language refinement, organization of academic writing, and improving clarity of expression. All research interpretations, theoretical arguments, data analysis, and conclusions were developed and verified by the authors based on the collected empirical data and relevant scholarly literature. The authors remain fully responsible for the accuracy, originality, and integrity of the manuscript.

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