Utilization of Information and Communication Technologies (ICT) in English Learning to Improve Language Literacy

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ABSTRACT

This study examines the use of Information and Communication Technologies (ICT) in English language learning as a means to enhance students' language literacy in Indonesia, particularly in response to the low literacy levels reported by PISA. The primary challenge addressed is the lack of understanding and ability among students to evaluate texts, largely due to limited access to interactive and practical learning resources. The purpose of this research is to explore the impact of ICT on improving various aspects of language literacy, including reading comprehension, information connection, and text evaluation skills. Utilizing a mixed-methods approach, data were collected through questionnaires, interviews, and documentation. The findings reveal that ICT usage significantly improves students' language literacy, especially in text comprehension and analysis. Based on previous studies and current technological applications, ICT has proven to be effective in enhancing both English language learning and literacy development. With greater accessibility, increased interactivity, and the support of innovative tools, ICT offers a more modern and effective alternative to traditional teaching methods. In conclusion, despite challenges related to access and distribution, ICT plays a positive and influential role in supporting the development of students' language literacy.

Keywords: ICT; Language Literacy, English Learning, PISA

INTRODUCTION

In this digital era, Information and Communication Technologies (ICT) have become integral to various aspects of life, including education. The application of ICT in language education, especially English, presents great potential to improve

students' language literacy. In Indonesia, there are significant challenges in achieving optimal language literacy levels, reflected in the low results of international literacy tests. PISA (Programme for International Student Assessment) reports that students in Indonesia tend to have low levels of language literacy, namely levels 1 and 2, which indicate limitations in their ability to understand and analyze texts in depth. Therefore, the integration of ICT in English learning is expected to be a solution to enrich the learning process and improve students' language literacy skills by the components identified by PISA, such as the ability to understand texts, connect information, and critically evaluate content (Mondolalo & Muda, 2022)

Several studies show that ICT plays a significant role in improving language skills, especially in the aspect of literacy. (Abduramanova, 2021) found that digital-based language applications can accelerate students' language understanding through more flexible interactions and richer materials. In addition, constructivist learning theories support the use of ICT in learning (Paris & Winograd, 2003) where technology allows students to learn more independently and interactively (Hailikari et al., 2022) so that they can develop the critical thinking skills needed in language literacy (Pressman, 2019) The PISA study of language literacy divides these skills into several levels, ranging from basic comprehension to complex analytical and evaluation skills. (Putrawangsa & Hasanah, 2022) explained that ICT is believed to be able to help students pass through the primary and secondary levels towards higher skills, as outlined in the PISA literacy components, including a deeper understanding of texts and the ability to connect information from various sources.

This study aims to examine the extent to which the use of ICT in English learning can improve students' language literacy in Indonesia. Through this study, practical approaches to using ICT can be found that can enrich the language learning process and support students in achieving a higher level of literacy. The study also aims to analyze the implications of ICT use on literacy skills, as identified in the PISA study, and suggest practical steps for teachers and educational institutions to integrate technology in English language teaching. This study's results show that using ICT in English learning can improve students' language literacy at various levels. The use of e-learning applications, digital reading resources, and other interactive media allows students to learn more flexibly and deeply, ultimately improving their literacy skills according to the components outlined by PISA. In addition, ICT also helps students go beyond the basic level of language literacy towards more complex skills, such as integrating information and evaluating text content. The results of this study confirm that ICT not only functions as a teaching aid but also as a means that enriches students' learning experience and improves their literacy skills in the context of English learning.

LITERATURE REVIEW

Previous Related Study

1. Online and other ICT-based Assessment Tools for Problem-solving Skills, Karyotaki & Drigas (2016). This research shows that the use of ICT-based media such as YouTube videos, learning apps, and interactive software helps improve students' speaking and writing skills. Access to multimedia resources provides repeated exposure to language structures, significantly improving students' language literacy. The use of multimedia in ICT has been proven to accelerate the mastery of vocabulary, grammar, and communication skills.
2. Deep learning-based user experience evaluation in distance learning. Sadigov et al. (2023). The use of e-learning platforms such as Moodle and Edmodo improve students' reading abilities through digital reading materials, interactive quizzes, and instant feedback. This research highlights the effectiveness of technology-supported self-learning. Help clarify how ICT can be used to support technology-based language literacy learning.
3. Application of Emerging ICT Means In Primary ESL Classes in Uzbekistan. Kobilova & Berdieva (2024). This study examines the role of ICT in improving digital literacy as well as language literacy of students in secondary schools. Apps like Kahoot, Quizizz, and Padlet are used to encourage student engagement in vocabulary and writing exercises. Showing the close relationship between digital literacy and language literacy in the context of ICT-based learning.

The Concept of Information and Communication Technology (ICT) in Education

ICT refers to technological tools and applications such as computers, the internet, educational software, and mobile devices that are used to support the learning process. In the context of language education, ICT allows learning to be more interactive, adaptive, and based on student needs. Social Interaction Theory (Vygotsky): Technology provides a collaborative environment that allows students to learn through interaction with teachers, friends, and online learning resources. Constructivism Theory: Students actively build knowledge through hands-on experience, facilitated by ICT tools such as simulations, discussion forums, and interactive multimedia**.**

ICT-Based Language Learning

ICT improves the accessibility of language learning and enables the development of literacy skills, both in reading and writing, through digital applications and platforms. E-Learning: Platforms like Duolingo, Moodle, or Google Classroom support self-paced language learning with structured learning resources. Mobile-Assisted Language Learning (MALL): Mobile technology makes learning easier anytime and anywhere, with a focus on developing speaking and listening skills,

and Blended Learning: The combination of face-to-face learning with online media increases student motivation and engagement in language learning.

METHOD

Design and Samples

This study uses a qualitative research design with a descriptive analysis approach to determine the application of ICT use to improve language literacy. This study's primary source of information comes from the results of observations and interviews adapted based on PISA literacy components, such as text comprehension and information integration. Data was also collected through surveys and questionnaires to determine the frequency, type of technology used, and views of students and teachers regarding the use of ICT in language learning. In addition, interviews were conducted with ten teachers to get their opinions on the effectiveness of ICTs in supporting literacy skills

Instrument and Procedure

Data collection is carried out in several stages. The first stage involves distributing questionnaires to students and teachers to understand patterns of technology use in language learning and the challenges they may face. Furthermore, in-depth interviews with several teachers were conducted to gain additional insights into changes in students' language literacy after using ICT. All the data collected were then categorized based on the language literacy level by PISA standards.

Data Analysis

In this study, data analysis was carried out using qualitative analysis. This qualitative data analysis involves identifying patterns, themes, and critical categories that emerge from data from in-depth interviews with teachers, open-ended responses to student questionnaires, and participatory observation during the learning process. The first stage in qualitative data analysis is collecting data from interviews and open questionnaires. The data was processed openly to find the main themes related to the experiences of students and teachers in using ICT in language learning. Furthermore, the thematic analysis stage identifies the relationship between various emerging themes and language literacy components according to PISA, namely text comprehension, information connection, and text evaluation. From the results of the thematic analysis, it was found that the use of ICT facilitates students in understanding the language material being taught and helps them integrate information from various digital text sources. Students showed an improved ability to evaluate digital texts due to interactive features in the learning app that allowed them to obtain direct feedback. As the final part of the analysis,

interpretive data was also conducted to focus on teachers' perceptions of changes in students' language literacy levels after using ICT. The results show that most teachers feel that improving students' language literacy is at the expected level, especially regarding comprehension and reflection of texts. Several obstacles were also identified, such as limited access to technology for students in certain areas, which affects the distribution of ICT benefits in improving literacy equally. The conclusion of this analysis shows that despite barriers to access to technology, overall, ICT has a positive impact on improving students' language literacy in Indonesia.

RESULT AND DISUSSION

Language Literation

Language literacy is a person's ability to understand, use, analyze, and express language effectively in written and oral form. Language literacy includes basic skills such as reading and writing. Still, it also includes the ability to think critically and understand a text or communication's context, message, and meaning. According to the Program for International Student Assessment (PISA), language literacy, or reading *literacy*, is the ability of individuals to understand, use, reflect, and actively engage with written text for them to achieve their personal goals, develop knowledge and potential, and participate effectively in society. PISA emphasizes that language literacy is about reading skills and involves critical understanding, reflective thinking, and applying information in various life contexts. PISA identifies some critical components of language literacy:

Table 1. Essential Components of Language Literacy

No	Language Literacy Components	Meaning
1	Text Access and Comprehension	It involves the ability to find information and key ideas in a text. Students must be able to recognize, see, and understand explicit details in texts and deduce meanings from specific contexts. This component is the basis for understanding the text as a whole.
2	Integration and Interpretation	Connecting information from different parts of the text or several different texts and interpreting the implied meaning or intent. This includes the ability to understand the relationships between ideas and look for deep meaning in the text, such as understanding the theme, the author's purpose, or point of view

3	Reflection and Evaluation	Focuses on critical thinking skills and evaluating the content of texts based on one's own experience and knowledge. Students need to compare the text with other contexts or personal experiences and consider the relevance of the text to a particular life or topic.
4	Flexibility in the Use of Text	The ability to use text for various purposes and situations, such as searching for information, solving problems, or understanding text in a digital environment. Language literacy also includes moving between print and digital texts and understanding complex texts.

(Pinker & Jackendoff, 2009)

PISA also classifies language literacy into several levels, describing students' ability to access, understand, and use texts. These levels include a wide range of levels, from basic skills to advanced abilities in language literacy. The following are the levels of language literacy according to PISA and the components of that literacy:

Table 2. Levels of Language Literacy

No	Level	Ability Description
	Level 1a	Students can access explicit information in elementary texts. They can identify the info listed directly but require additional assistance or clues to understand the text further.
	Level 1b	Students can access explicit information in more complex texts. Still, they can only understand basic details if they can do more in-depth analysis or relationships between text parts.
	Level 2	Students can identify and understand explicit information in longer and more complex texts. They can relate the information presented in the text to a broader context, although they may need guidance.
	Level 3	Students can interpret information that is more implicit in the text. They can relate and compare information from multiple parts of text or different texts and begin to assess texts based on their own perspectives.
	Level 4	Students can understand and relate to more complex information in the text. They can integrate information from different parts of the text or other texts and begin to evaluate the content of the text in a broader context.

	Level 5	Students can interpret highly complex texts, make in-depth inferences, and connect information across multiple sources. They can reflect on the text and conduct a more critical evaluation.
	Level 6	Students can handle very complex and abstract texts. They can evaluate, interpret, and analyze various texts profoundly and critically and make strong connections between texts and personal experiences.

(Kramsch, 1995)

Utilization of ICT in language literacy

ICT (Information and Communication Technology) in language literacy dramatically contributes to education development, especially in language learning in the digital era. ICT facilitates various tools and platforms that allow learning a language to be more interactive, personalized, and responsive to individual needs. According to (Aleksandrova et al., 2017) using technology in language literacy can improve students' communication skills through interactive apps and digital devices that provide them with opportunities to read, write, listen, and speak in realistic contexts. (M. Bambang Purwanto et al., 2024) This technology also allows students to practice language literacy independently with the support of apps such as Duolingo and Google Translate, which provide easy access to a wide range of language resources, even in regions that may lack traditional resources.

The application of ICT in language literacy is increasingly relevant amid the digitalization of education in Indonesia. In recent years, the Indonesian government has encouraged the integration of technology in teaching and learning activities through the *"Merdeka Belajar"* program and support from the Ministry of Education and Culture. This program aims to expand access to quality education for all levels of society, especially in remote and disadvantaged areas. E-learning applications such as *Ruang guru* and Zenius have become popular and accessible to many students in Indonesia. According to (UNESCO, 2018) ICT-based language learning positively impacts students' digital literacy and language because they are used to using technological devices that support a broader understanding of language contexts, thereby improving their reading and writing skills.

In addition, using ICT in language literacy provides opportunities for teachers to provide faster and more specific feedback through AI-based applications such as Grammarly. This technology makes it easier for teachers to identify grammatical errors and provide appropriate corrections (Hidayad et al., 2024) In Indonesia's education context, this is very helpful for teachers who teach in large classes and have limited time to provide direct feedback to each student. As (Yule & Brown, 2010) direct feedback provided through ICT can accelerate the learning process and increase students' motivation to improve their language literacy skills continuously. With the support of technology, students can be more independent in monitoring their learning progress and more motivated to develop language skills.

In the current era of digital education, gamification in language learning is also growing in Indonesia. Apps like Kahoot and Quizlet use gamification approaches to practice language literacy skills in a fun and interactive way. A study from (Hadiansah et al., 2021) on digital natives shows that gamification is very effective for generations growing up in a digital environment. In Indonesia, many schools are starting to use the app in both online and face-to-face classes to encourage active student participation (Novia et al., 2024) This phenomenon shows how technology plays a role in overcoming language literacy challenges by offering learning alternatives that are the characteristics of the current generation (Purwanto, Umar, et al., 2024) The integration of ICT in language literacy in Indonesia shows significant developments in education, creating inclusive, engaging, and relevant learning for students in the digital era (Irawan et al., 2024)

Finally, studies related to feedback theory in learning show that direct feedback is essential for developing language literacy. AI-based apps such as Grammarly and Google Voice, which provide automated feedback on grammar, spelling, and pronunciation, are increasingly being used in schools in Indonesia to help students correct mistakes quickly. This phenomenon is very relevant in Indonesia because there is an urgent need to improve students' foreign language skills in order to compete globally. With ICT, the language literacy learning process becomes more accessible and efficient to the needs of students, creating a more digitally and linguistically literate generation.

Improving Language Literacy through E-Learning and Mobile Applications

Improving language literacy through e-learning and mobile applications has become widely used in Indonesia, especially in learning foreign languages such as English. Based on the theory of constructivism from Jean Piaget, active and independent learning experiences are very effective in building language understanding Piaget (1982); Loughran & Berry (2005) state that e-learning provides various interactive and flexible content that allows students to learn at the time and place of their choice, making their learning experience more personalized and focused. In Indonesia, platforms such as *Ruangguru* and Zenius offer English courses that can be accessed anytime via mobile devices (Hidayad et al., 2023) This makes it easier for students in areas that are less accessible to formal education, providing equal access to quality learning materials.

Meanwhile, language learning mobile applications such as Duolingo and Babbel use a different but practical approach to improving language literacy through behaviorism theory (Matuzas, 2022) especially positive reinforcement. In this app, students are rewarded with points or badges after completing assignments, which helps to increase learning motivation. The theory of behaviorism put forward by Skinner, cited by (Turnbull & Dailey-O'Cain, 2009), states that positive reinforcement can reinforce certain behaviors, such as language learning perseverance. In Indonesia, these apps are becoming popular among learners

looking for a fun and stress-free learning experience (Syahputra, 2019) as they can learn at their own pace and feel more motivated to continue the learning process due to the reward element (Ginaya et al., 2020)

While e-learning offers a comprehensive learning experience with more structured material content, language learning mobile apps usually provide small practical exercises. Based on multimedia theory by (Taghani & Ghafournia, 2018), combining images, sounds, and text in e-learning can improve students' comprehension due to a complete variety of sensory stimulation. In the Indonesian context, platforms such as Quipper School or Zenius provide subject matter in the form of interactive videos, texts, and quizzes, providing students with more precise and in-depth study guides than mobile language learning apps (Ridayani & Purwanto, 2024) Meanwhile, the mobile application emphasizes daily practice that gradually hones language skills, making it more suitable for students who need continuous reinforcement (Purwanto, Yuliasri, et al., 2024).

On the other hand, the educational phenomenon in Indonesia after the COVID-19 pandemic increasingly supports the integration of e-learning and mobile applications as a form of blended learning. (Vygotsky & Cole, 1978) study of the "Zone of Proximal Development" (ZPD) shows that mentoring at an early stage is essential before students can learn independently. In blended learning, e-learning provides a more in-depth theoretical foundation and basic understanding, while mobile apps offer repetitive exercises that sharpen practical skills (Johnson & Freeman, 2001; Zakarneh et al., 2022) In Indonesia, schools are beginning to combine these two methods to improve language literacy, allowing students to learn independently outside the classroom while still receiving mentorship from teachers while in school (Walean et al., 2023) Thus, the two complement each other, making the language learning experience more holistic and adapting to the needs of students in the digital era.

The study results show that technology, such as language learning apps, e-learning platforms, and other digital media, can significantly improve English reading, writing, listening, and speaking skills. ICT-based learning allows students to access various in-depth and interactive materials, which helps them understand information more efficiently. In the context of language literacy, ICT supports students in practicing integrating information from multiple sources and assisting them in developing critical thinking and evaluation skills on texts, which is in line with the components of language literacy described in the PISA study. Therefore, ICT is a very effective tool to accelerate the development of language literacy at various levels, especially for students who are at the elementary to intermediate levels in language literacy skills.

This study implies that using ICT in language education can be an essential solution to improve language literacy outcomes, both in the classroom and in independent learning. ICT integration allows students to access materials more flexibly and comprehensively, which aligns with the language literacy levels identified by PISA,

such as the ability to understand, connect, and evaluate texts. Thus, education should pay attention to improving ICT skills among teachers to ensure the effective use of technology in language teaching. In addition, (Purwanto, 2023) states that ICT also has the potential to overcome inequality in access to education in remote areas or with limited resources, thereby increasing the equality of opportunity for all students to achieve a higher level of language literacy (Agustin & Purwanto, 2023).

The results of this study show that ICT plays a role in improving language literacy by providing opportunities for students to learn more interactively and independently. In the context of PISA, this technology can help students achieve higher levels of language literacy, as reflected in levels 3 and 4, which include the ability to relate information, evaluate texts, and integrate various sources of information. Students who actively use ICT can understand explicit text details and interpret, analyze, and reflect on meaning in a broader context (Elwood & MacLean, 2009; Jamalai & Krish, 2021) This reinforces the argument that technology facilitates access to materials and improves the critical and analytical thinking skills needed to achieve higher levels of language literacy (Hadiansah et al., 2021)

This study has similarities with previous studies, such as those conducted by (Karakas & Kartal, 2020) which also show that ICT plays a role in improving students' language skills. (Karakas & Kartal, 2020) observed that language learning apps like Duolingo can help students improve their language skills, which aligns with this study's findings. However, the main difference lies in the context and manner in which ICT is implemented (Liton, 2015) This research also refers to the PISA study, which emphasizes the development of language literacy skills in terms of text comprehension and the ability to analyze, evaluate, and adapt to various types of texts, both print and digital. As described in PISA, technology provides space for students to learn more adaptively (Elkilic et al., 2011) improving critical thinking skills (Devi et al., 2020) and evaluations that are often difficult to achieve in conventional learning (Rahamat et al., 2011).

Based on the results of this study, it is recommended that further research be focused on developing a more interactive and adaptive e-learning platform, which can be adjusted to the level of students' language literacy skills by the language literacy levels defined in the PISA study. Further research can also examine the use of advanced technology such as Augmented Reality (AR) or Virtual Reality (VR) to deepen a more immersive and comprehensive language learning experience. In addition, it is recommended that further evaluation be carried out regarding the role of ICTs in helping students achieve higher literacy levels, such as levels 5 and 6 in PISA, which require high skills in interpreting, connecting, and evaluating complex texts. Another recommendation is to integrate technology training on an ongoing basis for teachers so that they can use ICT more effectively in language teaching, as well as conduct longitudinal research to look at the long-term impact of ICT use in language learning.

CONCLUSION

The results of this study show that the use of Information and Communication Technologies (ICT) in English learning significantly impacts students' language literacy. Technology such as language learning apps, e-learning, and other digital platforms provides students with broader access to learning materials, improving basic skills such as reading and writing, critical thinking, and text evaluation skills. Technology allows students to access information more flexibly and interactively. It supports the development of higher literacy skills through the language literacy components listed in the PISA study, such as text comprehension, information linkage, and evaluation of different types of texts. These findings confirm that ICT assists students in achieving higher levels of language literacy, such as levels 3 and 4, which include integrating and assessing text information. The PISA study on language literacy identifies essential components such as text comprehension, information integration, and text reflection or evaluation skills that are relevant to the findings of this study. In the context of PISA, ICT plays a significant role in helping students achieve higher literacy levels, such as levels 3 to 6. Students exposed to ICT-based learning find it easier to relate information from different texts and integrate various perspectives, which corresponds to the abilities required at levels 4 and 5, according to PISA. Therefore, this study supports PISA's findings that technology can help improve language literacy in terms of comprehension of explicit texts and students' ability to interpret, analyze, and evaluate texts in a broader context. However, this study has several limitations that need to be considered. One of the main limitations is the limitation of the research sample, which only involves students in a specific area, so the results obtained may be limited to the broader population. In addition, although the use of ICT in language learning has been proven effective, this study has yet to fully explore other factors, such as students' level of technological skills, teachers' readiness to use ICT, or infrastructure constraints in various regions. This study did not thoroughly examine the long-term effects of ICT use in improving language literacy, so further research is needed to explore the impact in more depth.

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