IDEAS

Recognizing Teachers' Digital Literacy Strategies to Enhance Students' Reading Comprehension

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Abstract

A literature review has demonstrated that the implementation of digital literacy in the learning environment leads to significant changes in students. The purpose of this study was to analyze how teachers use digital literacy strategies in learning activities. To achieve this goal, a semi-structured qualitative study was carried out with five (female) English teachers from secondary schools through focused individual interviews. Six questions were asked during the interview and the findings were analyzed. The findings indicated that teachers engaged in diverse technology professional development to integrate digital media into classroom instruction. Some teachers faced challenges in the use of technology and sought assistance from tech- savvy colleagues. Furthermore, teachers often encountered challenges in the use of copyright which highlighted the need for accessible educational resources and support in navigating copyright issues. Finally, teachers use a blended strategy by combining the use of digital and traditional media in classroom teaching. This study will be useful for teachers and school administrators in preparing for advanced education in the era of digital transformation.

Introduction

The 21st century has brought about numerous social changes and challenges for humanity as a result of rapid technological and informational growth (Haeroni et al., 2023). In this era, information is abundant and often spread across various digital platforms. Therefore, teachers and students must be able to critically evaluate, understand, and analyze online information (Izana & Rahayu, 2020). Through fostering digital literacy in the classroom, teachers can empower students to navigate and utilize digital platforms confidently.

Teachers can leverage the wide range of digital resources, tools, and information in today's digital environment to improve their teaching practices (Gunduzalp, 2021). Consequently, developing digital literacy comprehension and strategies in language learning within a digitally connected environment is crucial (Cumhur, 2019). Teachers effectively integrate digital literacy strategies into every learning, significantly impacting students' reading comprehension (Laksani et al., 2020). Highlighting the need for teachers to effectively incorporate digital literacy to their curricula and differentiate instruction to meet individual student's needs.

Teacher with strong digital literacy can analyze how technology enhances learning and teaching (Atkins, 2018). Their effective utilization of digital literacy techniques in the classroom significantly influences students reading proficiency (Son et al., 2017a). Furthermore, as stated by (Hamidah, 2021), educators play a crucial role in adapting and integrating the curriculum into a new digital context go facilitate students' advancements following the current times. Being digitally literate requires teachers to effectively incorporate technology into their classroom practice and professional growth (Okasha, 2020).

In addition, effective utilization will lead to increased creativity and innovation among students. Thus, the implementation of digital literacy technology by teachers can greatly impact student learning outcomes (Adnyana et al., 2023). Though the significance of teacher digital literacy is generally accepted, more research is required to examine the precise tactics teachers use and how they directly affect various facets of reading comprehension, including inferential comprehension and critical analysis of online texts. By investigating how particular teachers' digital literacy techniques can enhance students' reading comprehension during learning activities, this study seeks to close this gap.

Several studies have explored the relationship between digital literacy and reading comprehension, with varying degrees of success. Several case studies demonstrate digital literacy strategies' effectiveness in improving students' reading comprehension. For instance, the results based on the study (Kamal Abd El- Rahman Ibrahim, 2020), there are positive results between the use of digital literacy and students' reading comprehension. Similarly, (Suganda, 2022) based on the findings, it can be stated that teachers and students will benefit from the use of digital media in a way that influences learning motivation, student achievement, and reading comprehension. However, according to (Mangen et al., 2013) the main findings show that students who read texts in print scored significantly better on the reading comprehension test than students who read the texts digitally.

Moreover, the growing evidence is based on the positive motivational effects of computer-aided reading teaching on students, especially students who find reading difficult and can then be helped by digital reading. In addition, in digital reading learning, teachers provide a series of high-quality texts that can support student progress at every level of comprehension.

The importance of teachers in promoting digital literacy is growing as the digital landscape changes. Teachers effectively integrate digital literacy strategies into every learning which will have a significant impact on students' reading comprehension (Laksani et al., 2020). Furthermore, teachers are also required to always follow the latest trends and developments so as not to be left behind and stay updated (Chama & Subaveerapandiyan, 2023).

In a world dominated by digital, the integration of technology is changing the way educational institutions operate. According to (Namaziandost et al., 2019), some of the findings from these studies indicate that digital literacy plays a significant role in increasing students' interest in reading. The current study explores how the teachers' digital literacy strategies are effective in improving students' reading comprehension in learning activities.

Literature Review
Digital Literacy and Reading Comprehension
In today's digital era, the ability to read and comprehend digital texts is crucial. With the integration of the internet and digital technologies in education, digital reading has become an alternative to traditional reading. This type of reading is commonly used in everyday life (Bakkaloglu, 2023). Moreover, reading comprehension in the digital age requires digital literacy, which includes the capacity to use digital tools and platforms efficiently, assess digital information critically, and interact and communicate in online settings (Laeli & Setiawan, 2020). According to (Ragil et al., 2022), students can acquire knowledge about technology and the internet through the use of information and communication.

This research also depicts successful outcomes in enhancing students' reading engagement. This can be seen from the majority of students choose digital reading due to its accessibility and wealth of information. It is evident from research that digital literacy is a valuable tool for improving students' critical thinking abilities in reading.

Digital Tools and Reading Comprehension
In this age, reading and learning are very easy with the many readily available technologies (Ningsih, 2022). Consequently, digital tools have become a part of education by providing innovative and creative ways to improve students' reading comprehension. Digital tools consist of various technologies such as eBooks, online reading platforms, and attention-grabbing educational apps. For example, a study by (Wood et al., 2017) said that students who used eBooks or online reading platforms showed increased reading comprehension and motivation compared to students who used print media.

Moreover, online reading platforms and, also eBooks can offer many advantages compared to traditional print media. Additionally, another study by (Samira & Nietfeld, 2023) showed that using interactive software has significant results and can improve students' reading comprehension skills, especially for students who find it difficult. However, despite the many benefits offered by digital media, it is not without its challenges. Therefore, it is important to combine the use of digital tools with traditional methods.

Teacher's Strategies for Digital Literacy

The growing importance of integrating technology in education, especially digital literacy, has been demonstrated in the improvement of students' reading comprehension skills. For instance, (Mishra & Narain, 2021) also discovered that there are advantageous effects of digital technology on education. Moreover, teachers' digital literacy competencies are a set of skills, knowledge, and attitudes that teachers must have to support student learning in an era where technology is increasingly developing (Marín & Castaneda, 2023). Furthermore, teacher readiness is one of the things that must be fulfilled in teaching digital competencies. This includes the readiness, knowledge, skills, and attitudes of teachers in integrating digital technology in encouraging the development of digital competencies of students (Katuli-Munyoro, 2023).

In addition, teachers incorporate various digital resources and platforms into their lesson plans to enhance student learning and introduce them to the latest technological advancements (Muallimin & Fridani,2023). For example, teachers use digital resources to aid language acquisition and reading comprehension, such as e-readers, audiobooks, and annotation software. Additionally, teachers encourage group projects using digital tools and individual reading plans tailored to each student's interests and reading ability. Consequently, digital literacy strategies have a substantial effect on improving student's reading comprehension abilities. When it comes to early childhood digital learning, teachers should take the initiative more actively. Although teachers have a positive attitude toward reading digital text as a result of this study, they have misconceptions about knowledge and practice (Laeli & Setiawan, n.d.). Therefore, it is suggested that, as the new literacy, English teachers should be equipped with specific knowledge about online reading.

It was discovered that many English learners struggle with their reading comprehension. One possible explanation for this issue is that foreign language teachers spend a lot of time teaching reading comprehension in the traditional sense, not making use of digital reading resources that can enhance students' comprehension (Saqr, 2021). Additionally, another barrier to teaching with technology is that some teachers feel uncomfortable using it and they doubt their ability to do so (Lim & Toh, 2020).

Method

The research employs a descriptive qualitative method to examine and analyze how teachers' digital literacy strategies enhance students' reading comprehension. Qualitative methods method helps us understand the significance of individuals or groups and investigate social or humanitarian issues (Flemming & Noyes, 2021). The research sample includes three elementary school English teachers with varying teaching background. To gather data, an interview will be conducted using a set of questions that will be posed to the interviewees. The initial step involved creating a set of questions and conducting an interview with the teacher.

After the data is collected, referring to the Miles and Huberman model (Sulasmi, 2022) and proceed with the following steps: a) Data reduction involves summarizing, choosing, and focusing on the most important elements while looking for themes and patterns. b) Data presentation involves putting the generated data on display, explaining it, and presenting it as graphs, tables, charts, or images. c) Data conclusion and verification through conclusion drawings of previously unclear objects described or illustrated.

Table 1. Teacher's Demography

Teacher Initial	Teacher Gender	Teacher Age	Teaching Experiences	Teaching Site (province)
Teacher S	Female	38	12 Years	West Java
Teacher I	Female	56	30 Years	West Java
Teacher A	Female	25	3 Years	West Java
Teacher K	Female	55	30 Years	West Java
Teacher L	Female	60	37,5 Years	West Java

The interviews were conducted in person at the teachers' place of teaching for about 7-20 minutes. The teachers' responses were recorded and transcribed with the consent of all teachers before the interviews began. The content of the interviews contained the teachers' digital literacy strategies in teaching to improve students' reading skills. Then the interviews were semi-structured and additional questions were asked if needed.

Table 2. Description of TAM Construct for The Interview Questions

TAM Construction	*Description*	*Question*
Teachers' strategies in Adapting Digital Technology	Teachers' professional development appears to be the most effective approach to enhancing teachers' digital literacy abilities since it can highlight and improve their digital literacy abilities.	-How do you stay current with new digital tools and technologies that can support reading comprehension, and what resources do you rely on for professional development in this area? -How do you balance the use of digital tools with more traditional approaches to reading instruction, and what role do you see technology playing in the future of reading education?
Teachers' Challenges in Facing Technology	More seasoned educators-those with at least 11 years of experience- found it harder to use digital devices, especially during the pandemic, and believed that they needed instruction in using a variety of educational apps and programs.	-What challenges do you face in using digital tools to support reading comprehension, and how do you overcome these challenges?
Teachers'	Teachers said they had more trouble	

Ability to Understand Digital Ethics in Creating Learning Content	with copyright protection when creating content than they did with protecting personal information when it came to digital ethics and safety.	-What specific challenges do you face when it comes to copyright protection in the digital classroom, and how do you navigate these challenges when creating educational content for your students?
Teaching Media for Students' Reading Comprehension	This implied that to promote interaction with students, a variety of tools or interactive teaching techniques needed to be used	-Can you describe the digital literacy strategies you use to support students' reading comprehension in your classroom? How do you integrate technology into your reading instruction, and what specific tools or platforms do you find most effective? -How do you differentiate instruction for students with varying levels of digital literacy, and what strategies do you use to support students who may struggle with technology?

This study has several limitations. The sample size is small, which limits the generalizability of the results to other contexts. The focus on primary school English teachers in a particular region may not reflect the experiences of teachers in other subject areas or educational settings. In addition, relying on self-reported data from interviews may lead to social desirability bias, as participants may portray their practices in a more favorable light. Future research could address these limitations by including a larger and more diverse sample, incorporating classroom observations to triangulate interview data, and exploring the impact of specific digital literacy strategies on student learning outcomes through

quantitative measures. Despite these limitations, this study provides valuable insights into elementary English teachers' digital practices and their impact on students' reading comprehension and contributes to a deeper understanding of this important area of research.

Results

Data was obtained by researchers through interview sessions with a total of five research subjects. All research subjects had to answer six questions from four categories of questions. Below are the results of the interviews which show that:

Teachers' Strategies in Adapting Digital Technology

In the interviews with several teachers, it was mentioned that a multifaceted approach was taken concerning keeping up with the development of digital tools and technology among teachers. The main strategies include participating in every teacher professional development activity, utilizing various resources and references, engaging in self-directed learning, and finally collaborating and seeking support from colleagues.

> I usually take part in seminars and training. Then you can also learn through the internet media, especially now that technology is very sophisticated, and all things can be learned. We also usually collaborate and share with fellow teachers, especially English teachers. (Excerpt from the interview with teacher T2 24/06/2024)

> I usually participate in webinars and training for teaching educators related to the use of technology for learning media. Then I also learn independently by utilizing the current technology. (Excerpt from the interview with teacher T3 24/06/2024)

The answers to the previous question also show that teachers actively balance the use of digital and traditional media tools in their classroom practices. They also recognize the important role that technology plays in improving students' reading comprehension. Thus, this analysis highlights the importance of an informed, collaborative, and balanced approach to integrating technology in education.

> Of course, in learning, I don't necessarily use digital tools or traditional tools only. I usually combine the two in every lesson. I usually use digital media to complement each other, if the print media feels incomplete then I usually use digital media to complement it. Then the role of technology itself is certainly very important for education today, where technology plays an important role. Technology also makes it easier for students and teachers to find resources for learning, especially reading resources. (Excerpt from the interview with teacher T1 24/06/2024)

Teachers' Challenges in Facing Technology

Some of the teachers in the interviews said that they experienced difficulties with technology due to age. Other teachers also experienced various challenges in using digital media, including access to resources, internet stability, and proficiency in using technology. So, their solution was to do self-learning or seek help from more tech-savvy colleagues. This collaborative approach will help teachers overcome the challenges

> Of course, for teachers who are already old, I find it difficult to keep up with learning technology currently. The solution is usually that I first learn it myself if I don't understand, then I ask those who understand. (Excerpt from the interview with teacher T4 24/06/2024)

> The challenge is that I am also lacking in understanding the technology, so when I want to use it, I don't understand and don't know how to use it, the solution is usually to ask younger teachers who do understand it. (Excerpt from the interview with teacher T5 25/06/2024)

> The obstacles faced are usually when we access text links in the form of English, there are usually obstacles to paid links and that makes it difficult for us to access English reading or text, then the obstacle is the stability of the internet network. I usually look for free ones to access to make it easier to find learning material. (Excerpt from the interview with teacher T3 24/06/2024)

Teachers' Ability to Understand Digital Ethics in Creating Learning Content

The interviews highlighted the challenges in accessing paid educational materials due to copyright restrictions, so teachers looked for free alternatives. This approach demonstrates teachers' resources and commitment to providing quality education despite limitations. Therefore, the findings emphasize the need for accessible educational resources and support for teachers in overcoming copyright issues.

> The obstacle is that usually the material I access is sometimes paid, if you don't subscribe, the material is usually not fully shown, so I switch to looking for other alternatives by using websites that are not paid. (Excerpt from the interview with teacher T3 24/06/2024)

> Yes, sometimes I find websites that must pay to be able to access the full material I am looking for, so the alternative is to look for free ones. (Excerpt from the interview with teacher T5 25/06/2024)

> The obstacle is of course the paid websites, so I try to find websites that are free but still provide good material information. (Excerpt from the interview with teacher T4 24/06/2024)

Teaching Media for Students' Reading Comprehension

The interviews show that teachers utilize a mix of digital and traditional strategies to support students' reading comprehension. Teachers also utilize various digital platforms and tools to make lessons more engaging and interactive. Thus, by integrating technology into reading instruction, teachers can create a diverse and accessible educational context that can improve student learning outcomes. This analysis highlights the importance of digital literacy in today's modern education and the effective use of technology to support student development.

> Usually, at the beginning of teaching, I give directions to students and then explain the material clearly, and then students pay close attention. I usually use YouTube as a learning technology media for looking for videos related to the material. (Excerpt from the interview with teacher T5 25/06/2024)

> The strategy is usually when learning to read, I usually give an example first then the students follow along like that with correct pronunciation and intonation. The applications used are usually YouTube, Google, Quizizz, and Canva or usually use audio speakers/tapes. (Excerpt from the interview with teacher T2 24/06/2024)

The next question revealed that some teachers used a variety of strategies in their teaching based on students 'digital literacy levels. Thus, common approaches used were utilizing peer tutors, categorizing students' ability levels, providing direct instruction, and addressing resource limitations through collaborative efforts. These strategies certainly help to ensure that all students receive the necessary support to improve their reading comprehension through the effective use of technology.

> To distinguish it, because we are a large class it is rather difficult to pay attention one by one, maybe with the help of peers, so there are also group discussions so they can be used to help each other. (Excerpt from the interview with teacher T1 24/06/2024)
> The strategy is that we usually differentiate students who are low, medium, medium, and high. Moreover, in the Merdeka curriculum, there is differentiated learning. To distinguish it through a questionnaire. How to overcome it with peer tutors so that children who understand and are smart can help their friends who still don't understand. (Excerpt from the interview with teacher T2 24/06/2024)

Discussion

As discussed in the previous data, interviews were conducted to explore what digital literacy strategies teachers use to improve students' reading skills. As previous research suggest, of digital literacy strategies has shown significant potential for improving students' reading comprehension (Hu & Yu, 2021). Then by combining innovative tools and thoughtful pedagogical approaches, teachers can create a more engaging, interactive, and effective learning environment.

In the findings section of the interviews with several teachers, it is said that a multifaceted approach is taken to keep up with the development of digital tools and technology among teachers. The main strategies that teachers use is to utilize resources and references, to do self- learning, and to collaborate and seek support from colleagues. This emphasizes the value of peer learning in navigating the digital world and is consistent with the idea of professional learning communities. The second finding, it is said that some teachers also experience difficulties when using digital media due to age, so they need more help from teachers who are familiar with digital media.

Other teachers also experienced difficulties and challenges when using digital media, including access to resources, internet stability, and proficiency when operating digital media. In addition, the issue of copyright restrictions on teaching materials proved to be a significant barrier. Teachers reported looking for free or open-source alternatives due to subscription costs, which can impact the quality and variety of resources available to students. This highlights the need for more affordable and accessible digital resources for educational purposes.

The next finding, it is said that the interview results show that teachers use a combination of digital and traditional learning strategies to improve students' reading skills. Furthermore, teachers also make extensive use of digital platforms and media to make learning more engaging and interactive. So, by integrating technology into reading instruction, teachers can create diverse teaching and accessible educational contexts that can improve student learning outcomes.

The last finding, some teachers used a variety of strategies in their teaching based on students' digital literacy levels. Hence the commonly used approaches are peer tutoring, categorizing students' abilities, providing direct teaching, and overcoming limitations through collaborative efforts. Furthermore, an example from teacher I's interview mentioned that she realizes students' different levels of digital literacy and adjusts her teaching strategies accordingly.

In conclusion, this study highlights the importance of a communicative and balanced approach in integrating strategies to promote digital literacy in education. Teachers need support and training to navigate the digital landscape and adapt their teaching practices to the different needs of students. Future

research should examine the long-term impact of strategies to promote digital literacy on student learning outcomes and evaluate the effectiveness of different models of continuing professional development in improving teachers' digital literacy. Although the results of this study are limited in scope, they provide valuable information for educators and policymakers interested in using technology to improve reading instruction.

Conclusion

This study analyses what digital literacy strategies are used by teachers to improve students' reading comprehension. Through interviews, several findings emerged. This research identified 4 problems, namely a) Teachers' strategies in adapting digital technology. b) Teachers' challenges in facing technology. c) Teachers' ability to understand digital ethics in creating learning content. d) Teaching media for students' reading comprehension. The strategies used by teachers were also identified through the answers from the interviews, and the difficulties teachers felt in integrating digital media literacy into classroom teaching were highlighted.

Furthermore, this study also revealed the difficulties faced by older teachers in adjusting to current technological developments. They have to try harder to understand technological developments and ask younger teachers who are familiar with technology. In addition, this finding underlines the importance of digital literacy strategies used by teachers in improving students' reading skills. In conclusion, this study highlights some of the strategies used by teachers and the problems experienced by them in integrating digital literacy into classroom learning.

By using appropriate strategies and overcoming the problems faced, teachers will be able to empower students to improve their reading skills. The researcher hopes that furthered research should be more specific in knowing what digital literacy strategies teachers use to improve students' reading skills. In addition, research involving large samples will be more useful in determining the effectiveness of implementing digital literacy strategies to improve students' reading skills.

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