An Influence of Advancing Technology on Students' Reading and Writing Proficiency

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Abstract

The rapid advancement of technology has significantly altered educational practices and expectations, particularly in reading and writing. This study investigates the influence of evolving technology on students' proficiency in these critical areas. With the proliferation of digital tools such as laptops, tablets, and internet resources, the traditional classroom landscape has been transformed, impacting both instructional strategies and students' learning experiences. The study focuses on middle school students, a demographic increasingly exposed to digital technology. The literature review provides a theoretical framework for understanding the intersection of technology and literacy skills. At the same time, interviews and surveys offer practical insights into how technology is implemented in educational settings and its perceived effects on students' reading and writing capabilities. Findings reveal a generally positive impact of technology integration on students' literacy skills. Digital tools have facilitated diverse reading and writing practices, promoting greater engagement and personalized learning opportunities. Teachers report improvements in students' ability to access, analyze, and produce text, suggesting that technology can enhance writing skills and support reading comprehension through interactive and multimedia resources. However, the study also identifies a growing dependency on technology, with concerns about potential distractions and the diminishing emphasis on traditional literacy practices. In conclusion, while advancing technology presents numerous benefits for enhancing students' reading and writing proficiency, it also necessitates a balanced approach to avoid over-reliance

Key Words : Technology, Educational Technology, Developing Reading and Writing Skills through Technology

Introduction

In the 21st century, integrating technology into educational environments has ushered in a transformative era for teaching and learning. This shift has been particularly pronounced in the domain of literacy, where advancements in technology have significantly altered how students engage with reading and writing. The proliferation of digital tools—such as laptops, tablets, and internet-based applications—has revolutionized traditional pedagogical approaches, presenting opportunities and challenges in developing students' literacy skills.

The influence of advancing technology on students' reading and writing proficiency is a critical area of inquiry, reflecting broader changes in educational practices and societal expectations. As classrooms increasingly incorporate digital resources, students' interactions with text are no longer confined to traditional print media. Instead, they navigate various formats, including e-books, online articles, and interactive platforms. This shift necessitates reevaluating how literacy is defined and taught, raising questions about the effectiveness of technology in enhancing reading comprehension and writing ability. Research on this topic often highlights the dual-edged nature of technological integration. On the one hand, digital tools offer unprecedented access to information and innovative methods for writing and reading, potentially fostering deeper engagement and personalized learning experiences. Technology-enabled platforms can support a variety of learning styles, cater to individual needs, and facilitate collaborative learning. On the other hand, concerns persist regarding the potential for technology to detract from traditional literacy practices, such as critical thinking and the development of writing skills. This study examines current trends and empirical evidence by exploring the impact of advancing technology on students' reading and writing proficiency.

Technology, Literacy, and Reading

Literacy has emerged as a significant concern in U.S. schools for various reasons. Data from 2009 revealed that only 28% of eighth graders and 34% of twelfth graders met proficient reading standards, according to the National Education Goals Panel (Joseph & Schisler, 2009). The trend of declining literacy continued, with the 2019 National Assessment of Educational Progress highlighting a significant drop in reading scores among fourth and eighth graders across various states, demographics, and types of schools (Sparks, 2019, p. 1). The past decade has seen a notable decline in student literacy, but the precise causes and full extent of this decline remain under investigation as researchers work to identify the root

issues and develop practical solutions. For effective literacy development, readers must grasp the text's literal meaning, reflect on its significance, and engage actively to build personal comprehension (Race, 2004). With technology transcending traditional design constraints and media types, readers need versatile skills to interact with and adapt to each new text they encounter (Felvegi, 2013, p. 21). As mobile technologies become increasingly prevalent, they have become vital tools for educators to support and enhance struggling readers' literacy. Over the past decade, educators have increasingly leveraged existing technology to enhance student literacy. Advances in computer technologies and software have enabled students to overcome various reading challenges and make significant progress (Ash, 2011). Audiobooks have emerged as a powerful solution for improving literacy among these technological tools. By providing students with auditory access to texts, audiobooks alleviate the decoding difficulties that many readers face.

The Significance of Writing: Technology, Obstacles, and Concerns

The mediums through which we write have evolved, transforming how people express their ideas. As typing on computers and using word processing programs have streamlined the writing process, handwriting has become a transitional skill rather than a primary writing mode. Despite this shift, handwriting remains a fundamental skill that supports effective communication and allows students to demonstrate their knowledge across various subjects (Asher, 2006; Collette, Anson, Halabi, Schlierman, & Suriner, 2017). Handwriting mastery is associated with a deeper understanding of the writing process and should not be overlooked by educators. Research by Dinehart (2015) links quality handwriting to improved academic performance, and McCarroll and Fletcher (2017) note that "when handwriting is mastered, some students experience more success in writing and reading" (p. 8).

Asher (2006) emphasized that "students need consistent instruction on how to form the individual letters, and the instruction should be coordinated with the higher grades" (p. 467). Ensuring instructional continuity would enable teachers to maintain uniform expectations regarding students' writing abilities throughout their education. In 2007, test scores showed that 18% of twelfth-grade students failed to meet basic writing standards in narrative, expository, and persuasive texts (Juarez, 2014). This lack of continuity in writing instruction may contribute to students' observed decline in writing proficiency.

Advantages of Technology Integration

Technology integration in U.S. schools has yielded significant benefits in the past decade. The introduction of mobile technologies—such as laptops, tablets, and enhanced internet access—has offered innovative ways to engage students who may lack motivation for traditional instructional strategies that foster critical thinking and problem-solving skills (Race, 2004, p. 20). These technological tools have enabled educators to utilize diverse teaching methods and resources, enriching the classroom experience.

The core objective of education is to address inequalities, promote social mobility, and equip students to navigate new experiences in daily life (Felvegi, 2013). Integrating computer technology into education is a crucial aspect of preparing students for the realities of modern life. Beyond aligning with the Common Core standards, integrating technology ensures students are well-prepared to adapt to societal changes and technological advancements. Mobile technologies have the potential to boost student engagement in the classroom significantly. The internet offers extensive information and resources that, when leveraged effectively, can significantly enhance the learning process. According to Stewart and his colleagues (2010), “New media can enable teachers and students to immerse their senses in the material and to engage in two-way communication with and about the subject matter” (p. 3). This immersive interaction can also improve students’ reading and writing skills. However, a critical caution is that technology should not merely replicate traditional methods with new tools but be used to explore new approaches or simplify complex tasks (Ash, 2011, p. 22). Technology must be employed thoughtfully and purposefully to enhance students' reading and writing abilities. Research highlights several positive impacts of technology integration on the reading classroom. Maynard (2016) notes that electronic books are rekindling interest in classic literature by incorporating interactive elements such as images and videos, which are unavailable in traditional print versions. This interactive medium enhances the engagement with the text, making classic works more accessible and appealing to students.

Limitations of Escalated Technology Utilisation

As technology use in the classroom has increased, several drawbacks have emerged. The rapid development of mobile technologies has left educators struggling to keep pace. Felvegi (2013) noted that “the continual changes in new technologies have brought great possibilities,

but also great challenges, new sets of skills and competencies needed to cope with them" (p. 17). This relentless evolution makes it challenging for teachers to acquire new skills as quickly as technology advances. A noticeable gap has emerged between digital natives—students who have grown up with technology—and digital immigrants—teachers who must adapt to these new tools.

Additionally, a significant digital divide persists globally, influenced by economic and social factors. Stewart et al. (2010) highlight that this divide results in varying levels of technology access across different economic and social classes, further complicating efforts to integrate technology equitably in education (p. 3). "The digital divide in U.S. public schools has long been a pressing concern, with students from low-income families often struggling to access the internet and digital tools at home. However, a surprising trend has emerged: despite these challenges, a staggering 90% of students in grades four and eight now have access to a computer, tablet, or smartphone for academic purposes at home, with most having multiple devices at their fingertips (Sparks, 2019). This marks a significant shift in the past decade, with the technology gap between economic and social classes narrowing dramatically.

Applications and Tools For The Development of Reading and Writing Skills

In the digital age, many applications and tools have emerged to support the development of reading and writing skills. These range from sophisticated e-readers with integrated dictionaries to AI-powered writing assistants that offer real-time grammar and style suggestions. Language learners benefit from apps that use spaced repetition algorithms to enhance vocabulary acquisition, while aspiring authors can utilize story planning software to structure their narratives. The subsequent applications and tools are crucial for enhancing reading and writing skills, which benefits the students.

1) **Duolingo**

   One notable app is **Duolingo**, a widely used language-learning platform. While primarily known for language learning, research by **Loewen et al. (2019)** indicated that Duolingo significantly improved users' reading comprehension through structured lessons that integrate reading passages with comprehension tasks. One of Duolingo's core strengths is incorporating short texts, vocabulary exercises, and

sentence translation tasks, which are beneficial for developing reading skills. Using scaffolded learning, Duolingo introduces new vocabulary and phrases, gradually building a learner's reading proficiency. The spaced repetition algorithm ensures learners review vocabulary optimally, reinforcing retention (Vesselinov & Grego, 2012).

2) **Kindle**

E-readers and digital reading platforms such as **Kindle** and **Kobo** have been lauded for their potential in developing reading skills. E-readers offer features like built-in dictionaries, text-to-speech options, and customizable fonts, all supporting comprehension and fluency. A study by **Ciampa (2012)** demonstrated that e-readers improved students' motivation and engagement, especially for reluctant readers. These tools provide instant feedback and enhance the interactive nature of reading, making the process more enjoyable and less intimidating.

3) **Newsela**

Newsela is another platform that enhances comprehension by providing news articles at varying reading levels, allowing students to engage with current events while practicing critical reading skills. **Williams (2018)** found that Newsela improved comprehension and fostered critical thinking skills as students were encouraged to compare texts at different reading levels.

Advantages of Applications and Tools for the Enhancement of Reading and Writing Skills

Integrating digital applications and tools has revolutionized the development of reading and writing skills, particularly in educational contexts. These technologies have provided new avenues for improving literacy by enhancing accessibility, personalizing learning experiences, and addressing diverse learner needs. This literature review explores key studies investigating the benefits of these tools in supporting reading and writing skills development. Various digital applications have been shown to enhance reading comprehension and proficiency significantly. For instance, Alharbi (2022) discusses the challenges faced by learners of English as a Foreign Language (EFL) in Saudi Arabia and how technology-aided interventions, such as multimedia tools, help address language barriers by increasing student engagement and motivation. This study highlights how diversified teaching methods, including digital applications, can substantially improve reading skills in foreign language learners. Additionally, Thamrin et al. (2019) examined the role of higher-order thinking Skills (HOTS) in improving reading comprehension. Their research suggests that applying HOTS strategies through digital platforms enables learners to engage deeply with texts, improving comprehension and critical thinking abilities. Incorporating mobile technology in classrooms, such as using tablets or smartphones for HOTS tasks, further enhances this process by making learning more interactive and dynamic.

Digital tools have also been shown to benefit writing instruction significantly. A study by Rad and Jafarpour (2022) examined the effects of interventions targeting well-being, grit, and emotion regulation on L2 (second language) learners' writing skills. Their findings indicate that these digital tools boost learners' emotional resilience and significantly enhance their writing proficiency. This highlights the role of affective tools in supporting the psychological aspects of writing, thus leading to better academic outcomes.

Mobile applications like WhatsApp have proven valuable in promoting reading and writing skills. Ahmed (2019) studied using WhatsApp as a pedagogical tool for Yemeni EFL learners. The findings demonstrated that WhatsApp-enabled learners continuously practice reading and writing, fostering vocabulary acquisition, grammatical accuracy, and comprehension through social interaction and feedback. These findings suggest that mobile-assisted language learning (MALL) tools promote natural language usage, bridging the gap between classroom learning and real-world application. For students with disabilities, assistive technologies have had a profound impact on both reading and writing skills. Svensson et al. (2019) investigated the effects of assistive technology interventions for students with severe reading disabilities, concluding that text-to-speech and speech-to-text tools scaffolded both reading and writing processes. The technology also increased learners' motivation, facilitating better academic outcomes than traditional methods. The role of instructional design in digital literacy tools is crucial for enhancing reading and writing.

Limitations of Utilising Applications and Tools for the Development of Reading and Writing Proficiency

One notable limitation is the difficulty in replicating the nuanced processes involved in traditional literacy learning. For instance, Thompson (2014) critiques existing computational models for reading development, emphasizing that many tools inadequately address the multifaceted nature of word reading acquisition, focusing predominantly on phonics while neglecting other essential contextual elements. This narrow scope can limit the effectiveness of such tools in fostering comprehensive reading proficiency. Furthermore, using applications for writing development often leads to uneven learning outcomes, especially when these tools are expected to handle complex tasks like feedback and collaborative writing. For example, a study by Cho et al. (2023) on the Canvas Learning Management System (LMS) revealed that, although it was beneficial for content delivery and classroom management, it was less effective in supporting collaborative writing tasks and peer feedback mechanisms, which are crucial for developing writing proficiency. Regarding motivation and engagement, gamified educational apps have shown promise but face significant challenges. Tiede et al. (2022) found that augmented reality-enhanced apps could motivate students with reading difficulties, but implementation challenges, such as technological limitations and user interface issues, constrained their motivational effects. These barriers prevent students from fully engaging with the tools, reducing their potential impact.

Access to technology also remains a critical barrier; while mobile and digital tools have the potential to democratize literacy education, socio-economic factors often impede equitable access. Despite their promise, Rostain (2019) discusses how educational technologies often fail to reach marginalized groups due to literacy and internet access limitations. This digital divide exacerbates educational inequalities, leaving disadvantaged students less opportunities to benefit from these tools. Moreover, the personalization features of digital tools are not always as effective as anticipated. Serra and Guerrero (2021) compare adaptive algorithms to teacher-led instruction in game-based environments and found no significant advantage in using automated systems for developing reading accuracy and fluency. The findings suggest that teacher-led sequences might still be superior in addressing individual student needs, which digital tools fail to replicate effectively.

Conclusion

The influence of advancing technology on students' reading and writing proficiency presents significant opportunities and challenges. While digital tools have shown potential to enhance engagement, provide personalized learning experiences, and offer innovative approaches to literacy instruction, concerns persist regarding over-reliance on technology, potential distractions from traditional practices, and the health implications of increased screen time. The research emphasizes the need for a balanced approach that thoughtfully integrates technology to complement, rather than replace, foundational literacy skills. Educators must navigate the rapid evolution of digital tools, address the narrowing but still present digital divide, and develop strategies to maximize the benefits of technology while mitigating its drawbacks. Moving forward, it is crucial to continue investigating the long-term impacts of digital learning on literacy skills and to develop best practices that ensure technology consistently supports and enhances students' reading and writing abilities, ultimately preparing them for success in an increasingly digital world.

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