Resarch Article /Araştırma Makalesi

Internal Barriers to Integrating Technology into Literacy Instruction: Challenges Faced by Teachers

Okuryazarlık Öğretiminde Teknoloji Entegrasyonunun İçsel Engelleri: Öğretmenlerin Karşılaştığı Zorluklar

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Abstract

Technology has had a significant impact on the field of education in recent years. In addition to reading and writing skills, digital skills and technological knowledge are now among the basic elements of education. With technology gaining such importance, the difficulties faced by schools in integrating technology and the difficulties experienced by teachers during the use of technology in basic lessons such as literacy lessons, especially in primary schools, should also be considered. This article examines the internal challenges that elementary school teachers face when integrating technology into literacy classes. The review focuses on the internal challenges of technology integration, based on empirical studies conducted between 1999 and 2020. The research consists of studies conducted in various countries, especially the United States, and different combinations of key terms such as "literacy", "internal challenges", and "technology beliefs" were searched in Google Scholar and ERIC databases. Additional studies were also included using the "snowball" method, and references in selected articles were reviewed. The findings show that teachers' attitudes, knowledge and skills, and time management are critical in integrating technology into literacy classes. In light of these findings, it is recommended that in-service training and workshops be organized on how primary school teachers can be more effective in using technology in literacy instructions.

Keywords: Literacy Education, Technology Integration, Internal Challenges

ÖZ

Teknolojinin eğitim alanında son dönemlerde büyük bir etkisi görülmektedir. Geleneksel okuma ve yazma becerilerinin yanı sıra, artık dijital beceriler ve teknolojik bilgi de eğitimin temel unsurları arasında yer alıyor. Teknolojinin bu denli önem kazanmasıyla, okulların teknolojiyi entegre etme sürecinde karşılaştıkları zorlukların yanı sıra, özellikle ilkokullarda okuma yazma dersleri gibi temel derslerde teknoloji kullanımı sırasında öğretmenlerin yaşadıkları zorluklar da dikkate alınmalıdır. Bu makale, ilkokul öğretmenlerinin, okuma ve yazma derslerine teknolojiyi dahil ederken karşılaştıkları iç zorlukları derinlemesine incelemektedir. İnceleme, 1999 ile 2020 yılları arasında yapılan empirik çalışmaları temel alarak, teknoloji entegrasyonunun karşılaşılan içsel zorlukları üzerine yoğunlaşmaktadır. Araştırma Amerika Birleşik Devletleri başta olmak üzere çeşitli ülkelerde gerçekleştirilen çalışmalardan oluşmakta, "okuryazarlık", "içsel zorluklar" ve "teknolojiye dair inançlar" gibi anahtar terimlerin farklı kombinasyonları Google Akademik ve ERIC veri tabanlarında aranmıştır. Ayrıca, "kartopu" yöntemi ile ek çalışmalar taranmış ve seçilen makalelerdeki referanslar gözden geçirilmiştir. Elde edilen bulgular, teknolojinin eğitime entegrasyonunda öğretmenlerin tutumları, bilgi ve becerileri, ve zaman yönetiminin kritik öneme sahip olduğunu göstermektedir. Bu bulgular ışığında, ilkokul öğretmenlerinin okuma ve yazma derslerinde teknoloji kullanımı konusunda nasıl daha etkili olabileceklerine dair hizmet içi eğitimler ve çalıştaylar düzenlenmesi önerilmektedir.

Anahtar Kelimeler: Okuma Yazma Eğitimi, Teknoloji Entegrasyonu, İçsel Zorluklar

Highlights

- This study addresses the internal challenges of primary school teachers in the face of technology integration in core courses such as literacy education and reveals that these challenges are tightly linked to teachers' attitudes towards technology, knowledge and skills, and time management skills.
- Research findings show that providing professional support in these areas can increase the quality of education by improving technology integration, and in this context, they emphasize the need to organize in-service training and workshops for primary school teachers.

1. Introduction

Technology has radically affected our daily lives and education systems in recent years. Nowadays, digital skills, technology literacy, and reading and writing skills have become mandatory worldwide and are considered an indispensable part of education systems. The study conducted by Mark and Emmanuel in 2019 clearly reveals this situation. Innovative tools and applications from technology penetrate more areas of our lives and transform educational practices daily. Schools have placed technology at the center of teaching and learning processes, making it one of the basic tools of education. The positive reflections of this change have been proven by many research studies conducted in the field of education. Studies such as Bain and Ross (1999), Hew and Brush (2007), and Sivin-Kachala and Bialo (2000) have shown that the use of technology has a significant positive impact on students' academic performance. According to these studies, the use of technology increases students' scores on standardized tests, improves their creative thinking skills, and reinforces their motivation for in-class activities. These opportunities provided by technology offer students more interactive and personalized learning experiences, thus making educational processes more effective and efficient.

Our research study is on primary school teachers' internal challenges in integrating technology into literacy lessons. In this study, we focused especially on primary school literacy teachers. We think that primary school teachers should use technology more actively because technology can improve students' learning experiences and help create a comfortable educational environment (Papa et al., 2023). The use of modern educational technologies can stimulate the release of students' cognitive activity and initiative and help create an active student who is successful in learning. Digital interactive technologies have significant potential to improve learning in primary schools, but their use must be justified and balanced with traditional learning methods. Therefore, primary school teachers need to actively use technology to meet today's educational needs and provide effective and efficient learning experiences to their students.

Numerous studies have revealed that literacy teachers face significant obstacles to integrating technology into their classes (Picton, 2019). Although today's classrooms are enriched with various technological tools and resources, it is seen that teachers need to use these opportunities effectively in their educational processes (Kopcha, 2012). Findings from research show that teachers generally use technology for grading and evaluating student performance (Gray et al., 2010; Kopcha, 2012). It has also been stated that technology is used for non-educational purposes, primarily to communicate with colleagues and students' parents (Kopcha, 2012; Russell et al., 2003; Zhao et al., 2002).

Especially in literacy teaching, the inability of teachers to use technology effectively in educational processes is seen as a serious deficiency. This situation highlights teachers' difficulties in technology integration (Kopcha, 2012). Although the International Reading Association (2009) called for technology integration in literacy teaching in schools, teacher education has not been effective in integrating technology into literacy teaching, and teachers cannot use technology effectively in literacy classes. (Belland, 2008; Polly et al., 2010). This lack of support prevents teachers from using technology appropriately and effectively in literacy lessons. The increasing importance of technology in literacy lessons requires educators and education systems to develop methods to facilitate technology integration. In this context, overcoming the challenges teachers face in the technology integration process is critical to fully using the potential of technology in education.

Our main purpose in this article is to deeply examine the internal challenges that primary school teachers face while integrating technology into literacy classes. Technology has become increasingly important in educational practices, especially with artificial intelligence (AI) actively entering our lives. Teachers' ability to use these tools effectively has become critical to student success. In this context, the research question at the center of our study is: "What are the internal challenges that primary school teachers face while integrating technology into literacy instruction?"

1.1 The Literacy and Technology Integration

The relationship between literacy and technology has been increasing in recent years with the development of technology. Developing technological tools and digital media have increased the importance of digital literacy by taking the concept of literacy beyond traditional boundaries. As Karchmer-Klein et al. (2022) emphasized, the relationship between technology literacy and technology integration has become even more evident with the Literacy Professional Preparation standards published by ILA (International Literacy Association) in 2017. These standards suggest that reading and writing in digital environments should be considered a fundamental part of literacy education. The authors suggest models on how teachers can integrate technology into their lessons and allow them to use technology more efficiently. A study by Hutchison and Woodward (2018) showed that students in the classrooms of teachers who participated in technology training performed significantly better in digital literacy. This finding reveals how technology integration can help students become more competent individuals in the digital world. Picton (2019) stated that the widespread use of devices such as smartphones and tablets and applications such as reading, writing, speaking, and listening had been reflected in many recent studies investigating the interaction of technology and literacy. The widespread use of these tools requires an even more in-depth exploration of the interaction between technology and literacy. This growing relationship enables educators and researchers to understand technology's effects on literacy education better and explore how to integrate this knowledge into instructional strategies.

1.2 The Terms of Technology Integration and the Importance of Integrating It into Teaching

The rapid advancement of technology in recent years has significantly impacted education. However, teachers often face numerous challenges when integrating technology into their classrooms. Therefore, we aim to emphasize the importance and necessity of technology integration in literacy instruction. Some studies indicate that there is no clear definition of technology integration in K-12 schools (Bebell et al., 2004; Hew & Brush, 2007). However, Hew and Brush (2007) try to find a definition in their study on the obstacles to technology integration in K-12 schools. The article noted that some studies discuss technology integration in terms of how teachers use technology to perform certain activities more reliably and efficiently and how this use can reshape these activities.

Technology integration in literacy refers to incorporating digital tools and resources into literacy instruction to enhance learning and engagement (Rafi et al., 2019). Technology integration involves using various technologies, such as websites, apps, and digital media, to support and enhance literacy skills and practices (McGee et al., 2020). The goal is to equip educators with the knowledge and skills to integrate technology effectively into literacy classrooms (Lisenbee et al., 2020). Technology integration in literacy instruction can promote active learning, interaction, and student participation (Christ et al., 2019). It also includes evaluation and application of digital tools to improve literacy classrooms, considering all students' needs and aspirations. By integrating technology into literacy education, teachers can become agents of change and create learning environments that support the diverse needs of their students.

Internal challenges are factors in teachers' beliefs and thoughts that hinder technology integration. Ertmer (1999) calls such challenges "secondary barriers" and defines them as factors that prevent teachers from adopting fundamental changes toward technology integration. These barriers arise from teachers' deeply rooted beliefs about teaching and learning processes (Lim & Khine, 2006). Hutchison and Woodward (2018) underlined the importance of technology, especially in literacy lessons, and pointed out the difficulties teachers face in integrating technology into these lessons. Because of these challenges, some teachers may avoid using technology. To overcome these problems, the authors developed a Technology Integration Planning Cycle (TIPC) for literacy teachers. This model aims to help teachers successfully integrate technology into their lessons and is presented as a critical tool in overcoming the obstacles encountered in this process. The topics

discussed in this article highlight the importance of technology integration in education and reveal the need to provide support to teachers in this process.

2. Methods

To scrutinize the internal challenges associated with integrating technology into teaching, we meticulously examined empirical research detailed in academic journals. Acknowledging the scarcity of literature in this niche, we chose not to restrict our search to a specific timeframe, ultimately reviewing studies published between 1999 and 2020. Our literature review specifically zeroes in on the internal obstacles that primary school teachers encounter in literacy classes during technology integration. The body of work we considered comprises empirical studies from the United States alongside international research. We employed a comprehensive keyword strategy with terms like 'literacy', 'internal challenges', 'primary school teachers', 'technology integration', 'literacy elementary teachers', and 'technology beliefs' across Google Scholar and ERIC databases. We implemented the snowball sampling technique to enrich our resource pool, delving into references within selected articles. This review strategically excluded articles focusing exclusively on pre-service teachers, those pertaining to secondary education or higher, literature addressing only external challenges of technology integration, as well as systematic and integrative reviews, meta-analyses, conference papers, and articles of a non-empirical nature or those not written in English. Ultimately, the paucity of studies addressing literacy educators' internal barriers to technology implementation led us to analyze empirical studies critically.

3. Results

Johnson et al. (2016) classified the challenges of technology integration as internal barriers and external barriers. Some studies (Ertmer, 1999; Hew & Brush, 2007) have classified this first-order and second-order barriers. In this literature review, since external barriers have mostly lost their functionality today (Ertmer et al., 2012), we explore primary school literacy teachers' internal challenges in integrating technology into their lessons. The external challenges of teachers are not within their possibilities. For example, if there are no technological devices in a school, this situation is not something that the teachers can handle alone. However, the internal challenges, such as the teachers' knowledge and skills, attitudes, and beliefs, are related to the teachers themselves and can be handled by the teachers.

In our literature review, we found these internal challenges in integrating technology into literacy instructions:

- o   Teachers' Attitudes and Beliefs About Integrating Technology into Literacy
- o   Teachers' Skills and Knowledge About Integrating Technology into Literacy
- o   Time-Related Challenges of Teachers While Integrating Technology into Literacy

a.   Teachers' Attitudes and Beliefs About Integrating Technology into Literacy

One of the teachers' biggest internal challenges in using technology in their lessons is their beliefs. Teachers' beliefs express internal structures that are influenced by teachers' previous experiences and guide new teaching practices (Hsu, 2016; Pajares, 1992). Therefore, teachers' beliefs are a good predictor of whether teachers will implement technology integration. At the same time, teacher beliefs can be a strong barrier to integrating technology.

Some studies examine the relationships between teachers' technology integration and their beliefs. Ertmer et al. (1999), in their study examining the relationship between teachers' technology use beliefs and first (external) and second (internal) degree barriers, found that teachers' beliefs about classroom practices shape their technology use goals and the weight they give to different barriers. In this study, we see that primary school teachers state that they use technology in literacy activities such as reading and writing. While some participants in the study stated that the students enjoyed technology-assisted literacy group activities, some teachers believed that technology was not suitable, especially for first-year students. Another study (Kurz-McDowell & Hannafin, 2004) examines primary school teachers' beliefs about learning and teaching and reveals the relationship

between their beliefs and how they use technology. The authors here show that belief systems need to be changed to facilitate innovative student-centered learning by technology, stating that teachers' beliefs are an important internal barrier in integrating technology. In this study, the authors stated that while some teachers actively use technology in students' writing process, some do not use it at the primary school level because of their beliefs. Xu and Zhu (2020) examine the factors affecting teachers' intention to integrate mobile devices into teaching and the relationship between these factors. The study revealed that while teachers' attitudes and technology beliefs had a significant positive effect on their intention to adopt mobile devices in teaching, subject culture clash negatively affected teachers' attitudes and technology beliefs. For example, if a teacher does not know how to teach literacy activities with technology, this negatively affects that teacher's belief in technology.

Some studies' findings have positive and negative effects on technology integration. In another study by Ertmer et al. (2012), teachers' own beliefs and attitudes about technology's relevance to students' learning were perceived as having the greatest impact on their success. They stated that the strongest barriers to teachers' use of technology are their current attitudes and beliefs toward technology. Therefore, it is unlikely that a primary school teacher who has negative attitudes and beliefs about technology use will use technology in literacy lessons. Another article (Lim & Khine, 2006) examines strategies for managing challenges to technology integration. In this article, among the emerging internal challenges for primary school teachers' technology integration, there is the belief that the use of technology cannot replace traditional education. Some teachers stated that technology could be used in lessons, but it is inappropriate to use it to prepare students for exams. Another study (Walker & Shepard, 2011) shows that elementary teachers' positive beliefs about technology integration enable them to use technology better. Here, the teachers stated that technology helps students gain new and original learning experiences and develop higher-order thinking skills. Uluyol and Sahin (2016), investigating primary school teachers' use of technology, found that teachers reported that technology increased student motivation, retention, participation, communication, decision-making, presentation, collaboration, problem-solving, self-confidence, comprehension, analysis, and expression. On the other hand, in the same study, it was determined that teachers with negative beliefs about technology stated that the use of technology was inappropriate for primary school students and, therefore, did not use it.

Some studies emphasize that professional development and training can change teachers' beliefs. Hutchison and Woodward (2018), in a study examining how teachers' perceptions of their proficiency in technology integration and their instructional planning and practices change when they participate in a technology-focused professional development model, stated that teachers' beliefs play an essential role in technology integration. The authors revealed that teachers whose beliefs and motivations changed positively after professional development performed significantly better in their students' digital literacy assessments.

Some recent studies have revealed how teachers' challenges in technology integration have changed over time. This study (Francom, 2020) examines how the barriers to technology integration of teachers have changed over time. It found that teacher beliefs decreased over time while access to technology tools and resources increased. This study shows that although teachers' perceptions of some challenges with technology integration have changed over time, teachers' beliefs about internal challenges are still a barrier to technology integration into lessons.

In literacy classes, teachers' beliefs about integrating technology play a decisive role in their usage goals and the obstacles they encounter. This reveals that teachers' attitudes and beliefs about technology integration are a central factor in the success of the integration process. The diversity of teachers' beliefs and attitudes about integrating technology shows that these beliefs and attitudes directly affect their practice styles. Overcoming these obstacles will increase teachers' knowledge and skills and enable technology integration in literacy education more effectively. Also, it appears

that professional development and training of teachers can positively change their attitudes and beliefs about technology integration.

As a result, teachers' internal challenges in integrating technology into literacy education depend largely on their attitudes and beliefs. Overcoming these barriers requires teachers to develop positive attitudes toward technology integration and gain more knowledge and skills in this area. Educational policies and professional development programs should be designed to help teachers meet these challenges. This approach is critical to maximizing the potential of technology in literacy education and equipping students with the skills required for the digital age.

b.   Teachers' Skills and Knowledge About Integrating Technology into Literacy

One of the other internal challenges is the teachers' knowledge and skills related to technology integration. We cannot expect a teacher who lacks technological knowledge and skills to be able to use technology in lessons. It's not just technical knowledge and skills. Primary school teachers may use technological devices very well, but if they do not know how to use technology in activities such as reading and writing, they cannot use it in teaching. Ertmer et al. (2012) stated that one of the biggest challenges in teachers' use of technology is their current knowledge and skill level of technology use. This shows that teachers' skills and knowledge in integrating technology into literacy play an important role. The authors stated that teachers use technology with their students in various ways, such as writing books, reading activities, associating students' learning with the real world, etc. Hsu (2016) examined existing beliefs, practices, and barriers to technology integration in her study with primary school teachers in the USA. Hsu (2016) stated in her study that language arts is the most striking subject for technology integration. The study identified challenges such as teachers' and students' lack of knowledge and skills to use technology in lessons and teachers' inability to integrate technology into lessons. Mogwe and Balotlegi (2020), in their study revealing classroom teachers' beliefs about technology integration, found that one of the barriers to teachers' technology integration is the lack of basic technology skills. They stated that knowledge and skills of technology are one of the main obstacles to adopting and using technology in the primary education system. The authors stated that technology should be used more actively, especially in learning and teaching. The fact that teachers do not have sufficient knowledge and skills about technology use causes them not to use technology in literacy activities.

Some studies have investigated how teachers' knowledge and skills, which are internal barriers to technology integration, can be prevented through training or professional development. Durff and Carter (2019) identified how some teachers successfully overcome barriers to technology integration. In this study, the authors draw attention to the solidarity between teachers and administration, especially regarding the internal barriers to technology integration. They stated that teacher training has an essential place in eliminating these obstacles. In this study, it was seen that there is a positive connection between the students' success and the teachers' technology integration. This means that students' success will increase when teachers use technology in their literacy lessons. Hutchison and Woodward (2018) also emphasize teachers' skills and knowledge. According to the authors, if teachers know how to integrate technology into lessons, they will do it. It depends on teachers' skills and knowledge regarding technology integration into literacy lessons. To support literacy teachers in incorporating technology into their lessons, they developed a professional development model focused on technology integration. The authors revealed that teachers with skills and knowledge after professional development performed significantly better in the digital literacy assessment of their students. Kopcha (2012) also emphasizes technology integration training. The author stated that the negative perception towards technology integration after the education on technology knowledge and skills of primary school teachers changed positively. Therefore, the knowledge and skills of teachers about technology integration affect their use of technology.

On the other hand, in some studies (Carver, 2016), although worrisome, teachers' knowledge and skills are not among the first considerations of teachers. In some cases, teachers have to deal with

more external obstacles. This is more common in schools in low-income areas. In this study, it was determined that teachers mostly use technology in reading activities and language teaching.

Research shows that teachers' knowledge and skill levels in technology integration are the key to success in technology use. These knowledge and skills include the capacity to use technology as a technical tool and as a pedagogical strategy to improve students' literacy abilities. Teachers' ability to integrate technology into literacy is vital to diversifying classroom activities and connecting students' learning processes to real-world contexts.

However, some studies have examined how professional development or training can address teachers' internal barriers to technology integration. Collaboration between teachers and administrators has been identified as an important factor in overcoming internal challenges encountered in the technology integration process. In particular, teacher education is critical in improving teachers' knowledge and skills in technology integration. It has been observed that teachers who participate in professional development programs have more positive attitudes and beliefs about technology integration and that their students significantly improve their digital literacy skills.

Ultimately, the ability to successfully integrate technology into literacy classes depends on teachers' levels of skill and knowledge regarding technology integration. Increasing teachers' competencies in this area will enable both teachers and students to interact with technology more effectively. Therefore, it is of great importance for teacher education and professional development programs to develop and implement strategies to support teachers in technology integration. This approach contributes to students' development of 21st-century skills by ensuring that the potential of technology is fully utilized in basic educational activities such as reading and writing.

c. Time-Related Challenges of Teachers while Integrating Technology into Literacy

Lack of time stands out among the challenges encountered in the technology integration process. Although this challenge is often viewed as an external factor, it can be considered an internal barrier to teachers' valuing and prioritizing technology. When teachers find technology valuable and understand the importance of integrating it into their educational processes, they may be more willing to make time for technology use. In the study conducted by Ertmer et al. (1999), it was pointed out that lack of time is perceived in different ways depending on teachers' beliefs about classroom practices and the role of technology in education. In this context, it can be concluded that lack of time is an internal obstacle related to teachers' belief systems.

Research has revealed that some teachers view technology use as a waste of time. Hsu's (2016) study on primary school teachers found that time was an obstacle for teachers to integrate technology into their lessons. Teachers stated that time was a barrier for reasons such as the need to learn new software or students' desire to produce work on computers (Ertmer et al., 1999). This shows that teachers' lack of sufficient knowledge and skills in technology integration leads them to believe that using technology causes a waste of time. In the study by Bilwani and Zehra (2016), in which they investigated teachers' perceptions of technology use in the classroom and the difficulties they face in the integration process, some teachers believe that technology can be time-consuming in the teaching and learning processes; some teachers think that the use of technology saves time.

This analysis shows that the lack of a time barrier to technology integration closely relates to teachers' attitudes, beliefs, and prioritizations towards technology. Increasing teachers' knowledge and skills in technology integration can help them overcome these internal challenges. Focusing teacher training and professional development programs on how the use of technology can enrich educational processes and time management strategies can enable teachers to integrate technology more effectively. Thus, it can be encouraged that technology integration is not seen as a waste of time, but rather as a means of increasing efficiency and interaction in education.

4. Discussions and Conclusions

In this study, we reviewed the articles that reveal the barriers that prevent teachers from using technology in lessons. These articles address primary school teachers' internal challenges while integrating technology into their lessons.

We have divided the difficulties teachers face while integrating technology into lessons into themes such as teachers' attitudes and beliefs about integrating technology into literacy (Francom, 2020; Hutchison & Woodward, 2018), Teachers' skills and knowledge about integrating technology into literacy (Ertmer et al., 2012; Hsu, 2016; Kopcha, 2012), and Time-related challenges of teachers while integrating technology into literacy (Bilwani & Zehra, 2016; Carver, 2016; Ertmer et al., 1999; Hsu, 2016). Studies reveal that teachers' attitudes and beliefs play a decisive role in their integrating technology into lessons (Francom, 2020; Hutchison & Woodward, 2018; Uluyol & Şahin, 2016; Walker & Shepard, 2011; Xu & Zhu, 2020). Teachers' attitudes and beliefs complement their knowledge and skills related to technology integration. Both are closely related to each other. Therefore, teachers cannot use technology in lessons because they do not have sufficient knowledge and skills on this subject. Articles stating that teachers' knowledge and skills prevent them from using technology are mainly studies from a few years ago (Ertmer et al., 2012; Hsu, 2016; Kopcha, 2012). Recent studies indicate that teachers' attitudes and beliefs significantly influence technology integration in the classroom (Francom, 2020; Hutchison & Woodward, 2018; Xu & Zhu, 2020). Additionally, time constraints are perceived by educators as a barrier to the integration of technology in their teaching (Bilwani & Zehra, 2016; Carver, 2016; Ertmer et al., 1999; Hsu, 2016). This perception is often due to the belief that technology use in lessons is an inefficient use of time, which stems from their attitudes, beliefs, and a lack of requisite knowledge and skills. Specifically, the notion of 'wasted time' is linked to educators' attitudes and beliefs about technology, while the excessive time spent using technology in lessons is attributed to their unfamiliarity with effective integration strategies. Consequently, it is essential to analyze 'time' as a distinct category when examining obstacles to technology integration in education.

The internal challenges that stand out in the studies also differ according to the countries. Similar internal challenges to technology integration arose both in the United States and other countries like China, Turkiye, Pakistan, Singapore, and Georgia. Some studies were conducted only with primary school teachers (Bilwani & Zehra, 2016; Ertmer et al., 1999; Kopcha, 2012; Mogwe & Balotlegi, 2020), while others were conducted in both primary and secondary school teachers (Ertmer et al., 2012; Francom, 2020; Xua & Zhu, 2020). A few studies have included primary school teachers, students, school principals, and technical support staff (Durff & Carter, 2019; Hutchison & Woodward, 2018). Our literature review mostly focused on studies conducted in the USA. However, we also included a few studies (Uluyol & Sahin, 2016; Walker & Shepard, 2011; Xua & Zhu, 2020) conducted in other countries to see the differences. The research we reviewed uses qualitative (Bilwani & Zehra, 2016; Carver, 2016; Ertmer et al., 2012), quantitative (Francom, 2020; Mogwe & Balotlegi, 2020; Xua & Zhu, 2020), and mixed (Hsu, 2016; Hutchison & Woodward, 2018) methods. Studies show that internal challenges have increased among the factors that prevent teachers from using technology in primary schools in recent years. On the other hand, although some studies (Carver, 2016) state that teachers' knowledge and skills are not among their first thoughts, although they are worrying, this situation is more common in some schools in low-income regions.

In this study, we aimed to analyze articles examining primary school teachers' internal challenges in integrating technology into literacy lessons. We wanted to concentrate especially on primary school literacy teachers. Primary school teachers should actively use technology in their classrooms to enhance learning and student engagement (Georgiou et al., 2023; Yuniasih & Haryanti, 2022). The rapid digitalization of society necessitates that educators prepare young people for life in a digital world. By incorporating digital interactive technologies, teachers can respond to educational trends, choose appropriate tools, and create an electronic educational environment

that meets the needs of younger students. The use of modern educational technologies can create a comfortable learning environment, promote cognitive activity, and develop students' initiative. Teachers can utilize various tools such as video call applications, online learning media, and online evaluation platforms to enhance the learning experience. Digital technology can support students with special needs and promote different literacy skills.

Studies have revealed that literacy teachers have difficulty integrating technology into their classes (Picton, 2019). Although there is a very rich technology environment in today's classrooms, teachers do not use this technology enough for educational purposes (Kopcha, 2012). Picton's (2019) report shows that most teachers believe technology can positively impact children's literacy learning. According to his research, most literacy teachers consider technology to be effective in engaging children in literacy. Johnson et al. (2016) state that teachers' attitudes and beliefs, skills and knowledge affect the role and effectiveness of technology in classrooms, their attitudes and beliefs, knowledge, and skills about both educational technology and pedagogy, and ultimately how teachers apply technology.

According to studies, teachers used technology mostly for grading and evaluation purposes (Gray et al., 2010; Kopcha, 2012) and for non-teaching tasks such as communicating with peers and parents (Kopcha, 2012; Russell et al., 2003; Zhao et al., 2002). This shows that teachers do not use technology correctly in teaching. One of the reasons for this is that teachers encounter several challenges while integrating technology into teaching (Kopcha, 2012).

Although the International Reading Association (2009) called for technology integration in literacy teaching in schools, teacher education has not been effective in integrating technology into literacy teaching, and teachers cannot use technology effectively in literacy classes (Belland, 2008; Polly et al., 2010). Due to the importance of technology in literacy lessons, identifying potential barriers to integrating these technologies in schools will be an essential step in improving the quality of teaching and learning. Therefore, it is essential to reveal teachers' challenges when using technology, especially in literacy classes.

The general findings in the studies show that teachers' use of technology is a necessity of the 21st century, and the obstacles that teachers face are now more internal challenges. For this reason, teachers should use technology in their literacy lessons by overcoming obstacles related to their attitudes and beliefs, knowledge and skills, and time. Many of today's students' teaching and learning needs can be met with technology. Technology can and should be used to improve the literacy of primary school students as well as kindergarten and even pre-kindergarten student.

All these studies show that there is still limited research on technology and literacy. Studies should be conducted to show how primary school literacy teachers can use technology in literacy lessons. Various workshops and professional development should be created. Studies specifically targeting primary school literacy lessons should be increased.

5. Limitations and Recommendations

This study has some limitations. First, our study focuses only on internal barriers to technology integration. In terms of time, it only includes studies conducted between 1999 and 2020. This time period and scope may cause current and potential new barriers to be overlooked, given the constant evolution of technology. The fact that our study is based solely on empirical articles leads to the exclusion of other valuable sources of information, such as gray literature, teacher surveys, and interviews. This methodological choice limits the depth and diversity of the research. While these limitations require caution in interpreting the study's findings, they also open the door to future research examining how technology integration challenges vary over time and geography.

Based on the results of our study, comprehensive professional development programs, especially for primary school teachers, are essential in overcoming internal obstacles in the technology integration process. These programs should focus on positively changing teachers' attitudes and

beliefs towards technology, increasing their technological skills and knowledge, and developing strategies to integrate technology into their lessons effectively. Additionally, it is recommended that teacher education curricula be updated to equip preservice teachers on technology integration. Educational policies and school administrations should support and encourage integration by providing teachers with sufficient time and resources for using technology. Finally, future research on technology integration to consider diversity in different geographies and education systems from a broader perspective will help us better understand barriers' cultural and systemic dimensions. These approaches are essential steps toward maximizing the potential of technology integration in education and developing students' 21st-century skills.

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