

# Integrating Digital Technologies into the Early Literacy Learning of Young Children

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**ABSTRACT:** *Currently, young children are experiencing the development of technologies in learning early literacy. Additionally, young children spend most of their daily time in their homes with families and caregivers. Therefore, early years educators are required to have a fulfilled understanding of how to promote learning early literacy with the integration of digital technologies. In this paper, we examined a range of peer-reviewed articles from 2014 to 2021 by using a qualitative method. We find that young children's involvement combined with the mediation of parents probably fosters the learning process of early literacy by utilizing digital technologies at home. Moreover, the exchange of knowledge related to young children's early literacy learning through using digital devices at home between schools and families also positively impacts the outcomes of the early literacy learning process. Even though the influence of digital devices on early literacy learning at home provides positive results, this paper identifies some gaps that emerge in the learning process.*

**KEYWORDS:** Early literacy; digital technologies; digital literacy; home literacy; early childhood education.

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## 1. Introduction

In the early education of the 21<sup>st</sup> century, the position of information and communication technology (ICT) in the learning and teaching process is acknowledged by learners, teachers, and parents. Currently, young children possibly access various technologies, such as tablets and smart devices, compared to previous generations (Marsh et al., 2017). Additionally, a significant quantity of research into how young learners use texts with technologies (Danby et al., 2016) and how young children could use technological tools to learn reading and writing in recent preschool classrooms (Doyle & Woods, 2018). Therefore, integrating digital devices into early literacy is essential for young children's early literacy learning outcomes.

Recently, the knowledge about young children's involvement with technological equipment to learn early literacy at home is unpopular due to the lack of studies that focused on it. Moreover, there is little knowledge related to the mediation of parents to the integration of digital technology with learning early literacy,

as well as how parents and schools exchange knowledge about young learners' use of technological devices in their home. This paper investigates the engagement of young children, the perspective of parents, and the exchange the information between family and school about young children's use of technologies in the home's context to learn early literacy. Based on this, educators could design appropriate lesson plans for young learners and build a close partnership between children and parents and caregivers.

The cognitive development theory of Piaget, Zhou and Brown (2015) indicate that in the stage of preoperational, young children begin to learn how to use languages, memories, and imagination more logically (Zhou & Brown, 2015), and young children in their first eight years start to familiar with technologies (Danby et al., 2017). Therefore, the age group from three to six is considered to explore in several studies that facilitate this paper to review a variety of relevant literature.

This article aims to clarify the influences of

digital devices on young children's early literacy learning at home by understanding parents' mediation, the engagement of young children, and the partnership between schools and families.

## 2. Methodology

This paper reviews different evidence from journal articles about studies conducted from 2014 to 2021 with a qualitative method on the integration of digital technologies into young children's early literacy learning. In this paper, a majority of articles are qualified peer-reviewed articles that gathered, synthesized, and analyzed information. In addition, this review uses peer-reviewed articles from well-known and reliable databases, such as Springer Link, Proquest, Taylor & Francis, Sage journals. Simultaneously, this paper searches different journal articles with following key terms related to the topic: "early literacy learning", "preschool", "early years", "young children", and combined with technological terms: "digital technologies", "digital literacy", "ICT", "multimodal". In order to review relevant literature as a foundation for further research, this review utilizes Bronfenbrenner's bioecological model. This model describes the development of children with the influences of narrow to broad contexts, such as individual, microsystem, mesosystem, exosystem, and macrosystem (Zhou & Brown, 2015; Grace et al., 2013). According to Grace et al. (2013), the bioecological model of Bronfenbrenner intends to capitalize on the interaction between complex layers of children's environment through social policy and culture.

After completing a previous professional project plan, the concept map used to identify relevant themes of the main issue is refined to narrow down on three main themes of this literature review. Additionally, 30 peer-reviewed articles used in this literature review are collected and summarised in a table to conclude common perspectives and different findings, which contribute to identifying three chosen themes. Moreover, the chosen themes are also found by reviewing implications and limitations from various journal articles.

## 3. Results

For this section, this review considers several databases in order to identify relevant articles, which focus on young children from three to six years old in dealing with digital literacy learning at home. This section emphasizes three main themes which are considered as significant in association with integrating technologies into young learners' early literacy learning at home, including the mediation of parents to young children's digital literacy activities at home, the engagement of young children with media literacy learning at home, and the connection between home and school with young children's digital literacy uses. Additionally, these three main themes of young children's digital literacies in their families are indicated by Kumpulainen and Gillen (2017). In association with the bioecological model of Bronfenbrenner (Grace et al., 2013), both schools and families are located in the microsystem layer. Undoubtedly, understanding the impacts of families on digital literacy practices of young children at home is essential, followed by the collaboration between schools and families.

### 3.1. The mediation of parents to young children's digital literacy activities at home

In current research in parental mediation to young children's use of digital devices in learning early literacy at home, there is a conflict in parents' understanding and belief (Kumpulainen & Gillen, 2017). To be specific, parents have both positive experience of digital uses in learning literacy at home (Knauf, 2016; Güneş, 2020; Kumpulainen et al., 2020; Neumann, 2018; Erdogan et al., 2019) and negative concern with digital literacies at home (Güneş, 2020; Kumpulainen et al., 2020; Brito et al., 2017; Erdogan et al., 2019). In the paper of Kumpulainen et al. (2020), researchers carry out an empirical data collection, which emphasizes a "day-in-the-life" methodology with two families in a suburban area in Finland in order to investigate the mediation of parents with their children's digital literacy learning at home. The research reveals that parents in both families provide rules and restrictions to their young children before using digital technologies

to learn. Kumpulainen et al. (2020) also conclude that young children's self-regulation in using digital technologies in learning literacy at home is significantly influenced and shaped by parents' mediation. Likewise, Ihmeideh (2019) also indicates that parents in the research have a positive approach in providing digital devices for their young children to learn early literacy. Specifically, the research was working with 240 parents of young children in the age group from four to seven years old and received a result that the parent believes the emergence of digital devices could positively impact young children's development (Ihmeideh, 2019). Besides, Neumann (2018) contributes to the positive influences of digital literacy learning in parents' perceptions, in particular, mothers play a vital role in instructing digital literacy learning for young children at home. This article reveals that early form letters and written words of young children's early literacy are possibly significantly enhanced by using tablets with the instruction of mothers (Neumann, 2018). This paper explains that the interaction between mothers and young children is warm and affectionate and leads to positive outcomes (Neumann, 2018).

Nevertheless, the concern of parents about the negative aspects of digital devices in learning literacy at home still exists. Even though parents admit that technologies provide value to young children's early literacy learning, they still worry that digital literacies could lead to negative social problems (Yılmaz Genç & Fidan, 2017). Additionally, Brito et al. (2017) conducted research with 140 families from 14 countries and concluded that a vast majority of parents believe the content of online devices is not appropriate for their young children. Moreover, the authoritative parent in the study prefers their young children to participate in physical outdoor activities to digital devices outside schools (Brito et al., 2017). This type of parent's perceptions of digital literacy learning is possibly regarded as a result of differences in educational levels (Güneş, 2020) and socio-cultural backgrounds (Brito et al., 2017). Furthermore, in the study of Erdogan et al. (2019), authors dealt with the mediate role of parents in young children's use of digital

devices in literacy learning. The authors indicate different negative perspectives from participants, including health, content, and addiction problems (Erdogan et al., 2019). Particularly, parents from the USA and Turkey highly estimate the position of motor experiences and the health issues related to vision problems is concerned by Korean and Chinese mothers (Erdogan et al. 2019).

Concerning the model of Bronfenbrenner, the context of the home is considered as an immediate environment of children's development in both physical and personality (Grace et al., 2013; Zhou & Brown, 2015). As a result, the perception and attitudes of parents on the use of digital literacies at home provide directed impacts on the practice of young children's digital literacies. Hence, the effectiveness of digital literacies at home depends on the rules and restrictions with contents, duration of use, which is provided by the parents. In order to gain positive outcomes in using digital devices to learn early literacy, parents are required to design rules and restrictions in terms of duration, content for their young children. In other words, young children could gradually establish their self-regulation by applying the parent's rules in using digital literacies at home. Even though the negative impacts of digital devices on young children's development are unavoidable, the positive results could overwhelm the negative aspects as long as parents have appropriate perceptions and attitudes with digital literacy practices at home.

### **3.2. The engagement of young children with digital literacy learning at home**

It now becomes common that media use is considered as a pervasive factor in young children's experience in the home environment (Dore et al., 2020), and many researchers found that young children are able to interact with digital technologies and screens at very early ages (Chaudron et al., 2019). In combination with the model of Bronfenbrenner, the involvement of children was considered as a central component of the model (Zhou & Brown, 2015). Grace et al. (2013) indicated that children are the centre and directly influence their environment instead of being affected by their surroundings. Thus, the

efficiency of media literacy learning at home is certainly influenced by the engagement of young learners. Additionally, digital technologies provide literacy tools to shape the early literacy experiences of young children with different modes in terms of words, sounds, and images (Sefton-Green et al., 2016). The duration that young children use to access digital technologies with purposes of learning and entertaining should be considered (Kostyrka-Allchorne et al., 2017; Lauricella et al., 2015; Palaiologou, 2016). Kostyrka- Allchorne et al. (2017) conducted a study on young children's use and preference for digital technologies. The result reveals that, on average, young children spend 13.42 hours a week accessing different kinds of technologies (Kostyrka-Allchorne et al., 2017) and use on-screen devices with more time than recommended in the American Academy of Pediatrics (Lauricella et al., 2015). To be specific, the amount of time used to watch television and DVDs by young children is eight hours per week (Kostyrka-Allchorne et al., 2017). Furthermore, the study also indicated the difference in accessing technologies related to gender diversity. Interestingly, boys seem to prefer using tablets and smartphones to girls (Kostyrka-Allchorne et al., 2017). Besides, Palaiologou (2016) carried out a study with 540 families, and the author found that young children in the research engage with three main types of digital devices, including televisions, computers, and the Internet. The research also explored that young children tend to change their engagement and preference with digital types at the age group from three to four (Palaiologou, 2016). In comparison with previous research with this change, a paper revealed that young children possibly have new preferences with digital technologies at the age of eight (Gutnick et al., 2011).

Seemingly, young children are able to understand and perceive new technologies sooner and faster than the previous period of time, and they could decide their preference with using digital technologies. In other words, young children's daily literacy activities are gradually enlarged by the influence of digital activities (Kumpulainen & Gillen, 2017). Various research

evidence indicates that the contribution of digital technologies in literacy learning could enlarge young children's activities at home (Roskos et al., 2016; Roskos et al., 2014; Flewitt et al., 2015; Palaiologou, 2016; Given et al., 2016). In the paper of Roskos et al. (2016), authors conduct a study with 33 young children at the age of four-year-old and find that using E-books with an introduction could expand target words and topic-related words in order to foster the development of vocabulary in early literacy context. In the study of Given et al. (2016), through observing participants using technological equipment to learn literacy at home, it finds that young children are provided more opportunities to include digital devices in their artistic and sociodramatic play. In contrast, Wang et al. (2019) argue that digital technologies' contribution does not influence the interest and concentration of young children with reading significantly. To be specific, the authors indicate that the interest of young learners in reading could be enhanced by varying modes of material, including flash animation, paper books, and AR books. Meanwhile, the AR books decrease the concentration of young learners in reading (Wang et al., 2019).

In general, this paper gathers a little more understanding about the engagement and interest of young learners in using digital literacy at home. However, there is still an existing gap, which is the safety and security issue with young children's digital literacy engagement at home. Chaudron et al. (2019) indicate that the safety and security aspects of young children's accessing digital literacy in their families do not have in-depth research.

### **3.3. The exchange of knowledge between home and school with young children's use of digital technologies to learning early literacy at home**

The connection between home and schools plays an integral role in developing young children's emergent literacy skills (Curry et al., 2016). In the model of Bronfenbrenner's bioecological theory, the microsystem's components surround children and have inter-relationships to foster children's development (Grace et al., 2013). In addition, families and



schools are included in the microsystem, so their association in the digital literacy learning of young learners should be considered. Several studies are dealing with the association between home and schools in enhancing the early literacy learning of young learners (Honan, 2019; Curry et al., 2016; Tan, 2015). However, the findings of knowledge exchange between home and school on young learners' digital literacy practices have not been identified (Kumpulainen & Gillen, 2019; Jung, 2018). This review provides some findings from a few papers across the exchange of knowledge between home and school with young children's digital literacy practices. With the view of the bioecological model of human development, Bronfenbrenner state that the development of children is covered by a number of layouts from narrow to broad, in terms of individual, microsystem, mesosystem, exosystem, and macrosystem (Zhou & Brown, 2015). Therefore, an individual's development is influenced and shaped by different contexts or settings. It is essential to understand the relationship and association between home and educational contexts in order to foster the emergent literacy learning of young children with digital technologies.

Besides, in the article of Palaiologou (2016), the author identifies that parents are welcomed to participate in the educational settings of schools by sharing information and practices. Specifically, Palaiologou (2016) explains that digital technologies have become an integral part of young children's daily life at home, and parents want to attend to the learning process of young children in schools with attention and supports from teachers and schools. Additionally, McGlynn-Stewart et al. (2019) also provide perspectives about the home-school connection with digital literacy practices. In particular, the Talking Stickers app is considered as potential digital equipment in strengthening the relationship between home and school with a borrow-a-book program (McGlynn-Stewart et al., 2019). Specifically, the borrow-a-book program has a function that records the discussion between young children and parents at home. Educators possibly listen to this audio and gain insights

regarding parent and children's interaction at home (McGlynn-Stewart et al., 2019). Thus, teachers certainly understand young learners' home contexts and could provide necessary intervention. Indeed, the learning quality of young children is undoubtedly promoted through the consistent home-school relationship.

Nonetheless, the exchange of knowledge between home and school possibly encounters possible challenges. Remarkably, Edward et al. (2017) carried out a mixed-method case study to identify possible disconnection between home and early education settings. The authors indicate that the differences in activity, time, place, and role could impact the use of digital devices in the home and educational contexts. In other words, the understanding and beliefs of parents and educators influence the development of young children's learning with the support of digital technologies. Therefore, these differences could lead to the constant tension between home and school in exchanging information regarding young children's digital literacy practices.

Certainly, the collaboration between families and educational settings could meet some obstacles due to the differences in social background, educational level, culture, and religion. However, the exchange of knowledge between home and school is integral and appropriate within the framework of Bronfenbrenner's bioecological model of individual development to ensure the learning process of young children's early digital literacy practices.

#### 4. Conclusion

With the home context located outside the classroom, this paper addresses three main themes involved in digital literacy learning at home. Firstly, parents simultaneously have positive and negative understanding and attitudes with integrating digital technologies in learning early literacy at home that influences young children's self-regulation. Moreover, the engagement of young children has differences between boys and girls. In particular, this review finds that boys tend to use smartphones and tablets more than girls. Additionally, the preference of young children for using technologies in learning literacy is

usually related to artistic and sociodramatic play. Interestingly, the preferences of young children normally are changed at the age group from three to four. Finally, parents certainly are welcomed to participate in the educational settings to exchange young children's information in order to develop their children's early literacy learning.

Besides, this review also explores a number of gaps in terms of the safety and security of young children's uses in integrating digital devices and the scale of measurement in evaluating the inputs and outputs of young children's digital literacies at home could have further research in upcoming papers.

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