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Parental perceptions on children's use of digital technology: A systematic review

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Understanding the extensive use of digital technology among modern children and its growing importance in education is essential for higher education institutions to prepare educators who can effectively collaborate with parents to integrate digital technology into early childhood education. Based on ecological systems theory, parental perceptions significantly influence children's digital usage. This paper undertook a systematic review, employing the PRISMA criteria to gain insight into how parental perceptions shape attitudes towards digital adoption to understand how this may influence teachers' integration within the ECE context. It reviewed articles from January 2015 to March 2023, utilising three databases: ERIC, Education Source, and Scopus, resulting in the inclusion of 24 articles. The findings demonstrated that parents possess a comprehensive awareness, considering not only the potential advantages and disadvantages that digital technology brings to their children but also the benefits and drawbacks for parents themselves. Additionally, parental perception is influenced by various factors stemming from both the child and the parent.

Keywords: Digital technology, early childhood education, parental perceptions, systematic review

Introduction

Children today are immersed in a digital environment from birth. From an early age, they have access to various digital devices and are occupied by these digital tools for a considerable portion of their time. Studies have shown that in New Zealand, toddlers at two years of age devote an average of around 10.5 hours weekly to screen time, which increases to 14 hours weekly as they reach approximately 3.75 years of age (Stewart et al., 2019). Children's use of digital technology has attracted considerable attention and generated extensive debate. Some researchers posit that exposure to digital technologies at a young age can benefit young children (Burke & Marsh, 2013), while others assert its adverse impact (Radesky et al., 2015; Vandewater et al., 2007). Some studies have explored the parental perspectives to determine how parents perceive their children's use of technology, as it is believed that parents exert immediate and direct influence on a child's development. This parental influence is highlighted in Bronfenbrenner's Ecological System Theory (Ryan, 2001). Bronfenbrenner underscored that an individual's development is shaped by a network of interconnected environmental systems, ranging from immediate surroundings to broader societal structures. Parents, situated in the first level of these systems, known as a microsystem, directly impact their child's development. For instance, they determine whether children can access digital devices at home and what digital resources are available (Plowman et al., 2012). Moreover, as illustrated by Bronfenbrenner, parental perception of technology can impact the interplay among diverse microsystems, such as the dynamic between the home and school environments. As the digitalisation process advances, children's engagement with digital technology is increasing, and it is believed that children will become more closely intertwined with these digital devices. The NZ Early Childhood curriculum, Te Whāriki, acknowledges the role and integration of digital and recognises the significance of promoting collaboration between educators and parents in supporting children to understand and make the most of the digital technology they encounter (Ministry of Education, n.d). It is essential to study parental perception to engage parents in this process and facilitate their support for children. Some research into parental perceptions has been done, but systematic reviews focused explicitly on this topic are scarce. Teacher perspectives have received more attention compared to parents. Only one review could be found that included parental perspectives. (Güneş, 2022), reviewed articles published between 2016 and 2020, examining the viewpoints on digital technology from children, parents, and teachers. Nevertheless, his review encompassed only 14 publications, of which four approached the topic from a parental standpoint. To address this research gap, this study conducted a systematic review of articles spanning from January 2015 to March 2023 to gain insights into parental perceptions regarding their young children's utilisation of digital technology and answer the following questions:

1. What are the perceptions of parents towards the use of digital technology within the early years?
2. What factors impact parental perception concerning their children's technology usage?

Method

This systematic literature review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, which involve three key phases: Identification, screening, and inclusion. Following this, rigorous data extraction and analysis were conducted. Three databases were chosen for the review: ERIC, Education Source, and Scopus, due to their relevance to the educational context, inclusivity of peer-reviewed papers, and being accessible to the authors. Articles from January 2015 to March 2023 were included. The search string employed included the following variation: “digital” or “technology” AND “early childhood” or “early years” or “kindergarten” or “preschool” AND “parent* perception” or “caregiver* perception. This identified 546 papers, and after filtering duplicates and ensuring that we could find full versions of these papers, 207 papers remained and progressed to the screening phase. For this review, specific inclusion and exclusion criteria were set. Articles needed to be in English, peer-reviewed, within the educational field, focus on technology use in children aged 0-8 and present empirical evidence. After reviewing the first author's titles and abstracts, 45 articles met these criteria. After this initial screening, both authors reviewed these papers in detail, and a further 21 were excluded. This included five articles focusing on the period of COVID-19 lockdowns, which was considered a unique circumstance and, therefore, not relevant to this review. In the end, 24 articles met all criteria and were further analysed, as depicted in Figure 1.

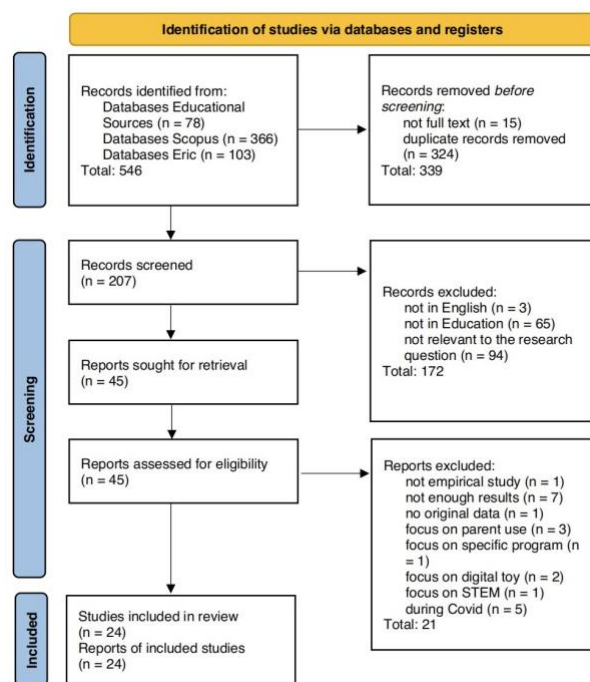


Figure 1: The procedures of article selection

After familiarising themselves with the articles, the authors used Excel and NVivo for data extraction. Data, such as research country, authors, and methodology, were recorded. A coding framework was developed, leading to the identification of key research themes.

Results

Overview of the studies

The authors categorised the data items and found that: 1) Most of these studies were conducted in Europe (N=11), 2) The year 2021 stood out with the highest number of papers (N=7), 3) Ten of the studies incorporated theoretical frameworks, with Vygotsky's sociocultural theory (N=4) and Bronfenbrenner's socio-ecological systems (N=3) being the most frequently adopted perspectives; 4) Most studies focused on the parents of children aged 3-6 years old (N=21), 5) Thirteen studies provided the demographic characteristics of their participants (parents), and eleven studies detailed the demographic characteristics of their participants' children, 6) Discussions concerning the advantages and disadvantages of children's digital technology use were prominent in 12 studies, 7) Nine studies demonstrated that parents have mixed feelings towards digital technology. In addition, two primary themes emerged: the advantages and disadvantages of children's digital

technology use and the factors influencing parental perception.

The advantages and disadvantages

In the 12 studies discussing the advantages and disadvantages of children's digital technology use, the authors found that parents consider this issue from two perspectives: its impact on their children and its influence on themselves as parents.

The impact on children

Parents value digital technology to enhance their children's education, build knowledge, improve abilities and skills, and foster long-term general development and social competence. This belief is supported by findings from multiple studies (Abed & Shackelford, 2021; Brito & Dias, 2020; Chen et al., 2019; Covolo et al., 2021; Gjelaj et al., 2020; Kotrla Topić et al., 2019; Mikelic Preradovic et al., 2016; Sadykova et al., 2016). For instance, in the study by (Covolo et al., 2021), parents correlated the acquisition of new vocabulary in children aged 3-5 with their utilisation of digital technology. While parents recognise the educational advantages that digital technology brings to their children, they also hold concerns regarding potential health issues, such as eye strain, sleep disturbances, sedentary behaviour, and the risk of obesity (Abed & Shackelford, 2021; Brito & Dias, 2020; Chen et al., 2019; Covolo et al., 2021; DeShelter & Slutsky, 2017; Gjelaj et al., 2020; Kotrla Topić et al., 2019; Sadykova et al., 2016). In addition, parents noted that digital device usage diverts their children's time from outdoor activities and traditional peer play (Donohue & Aladé, 2022; Kotrla Topić et al., 2019) and pushes children towards solitude and social isolation (Abed & Shackelford, 2021). Some parents expressed concerns regarding social engagement (DeShelter & Slutsky, 2017; Sadykova et al., 2016) and potential socialising problems (Gjelaj et al., 2020).

The impact on parents themselves

The utilisation of digital technology brings benefits not only to children but also to parents. In (Kotrla Topić et al., 2019), parents appreciated the flexibility and convenience that digital devices offered in educating their children. They found it easier to access a large amount of information and noted that the technology facilitated the presentation of abstract concepts through visuals and animations, improving the educational quality. Additionally, some parents consider digital technology as a form of babysitting, helping their children wait quietly and eat better (Chen et al., 2019; Dardanou et al., 2020). Nevertheless, parents also expressed concerns about the potential challenges they face due to their children's use of technology. They worried about the financial burden of purchasing digital devices and the considerable time and effort required to set up the devices, search for, install, update or uninstall applications for their children (Abed & Shackelford, 2021). Furthermore, many parents voiced concerns about managing their children's device usage (Abed & Shackelford, 2021; DeShelter & Slutsky, 2017; Donohue & Aladé, 2022).

Factors influencing parental perception

In the papers reviewed, various factors were considered to influence parental perception. These factors emanate from children and parents.

The factors related to the children themselves

The children's age and gender were the two most considered factors in the reviewed studies. Six studies indicated that parents alter their views on children's technology use based on the child's age (Covolo et al., 2021; Istenič et al., 2023; Kucirkova et al., 2018; Mikelic Preradovic et al., 2016; Vittrup et al., 2016; White, 2022). For instance, (Mikelic Preradovic et al., 2016) found that parents generally negatively perceive digital device use by children aged two or younger. However, their attitude becomes predominately positive for children aged six and above.

The factors from parents

Many factors originating from the parents themselves were explored. These factors included parents' age, gender, ethnic and cultural background, educational level, income, and profession (Dardanou et al., 2020; McCloskey et al., 2018; Papadakis et al., 2019; Vaiopoulou et al., 2021; Vittrup et al., 2016). The one factor that garnered the most attention among the reviewed studies was educational level, but studies investigating this factor produced inconsistent findings. (White, 2022) and (Papadakis et al., 2019) demonstrated that parents with higher educational levels were more likely to recognise the potential disadvantages of digital technology and engage in proactive mediation, such as offering alternative play options and restricting screen time for their children. However, (Vittrup et al., 2016) and (Vaiopoulou et al., 2021) found that parental education level did not significantly impact their perceptions, including usability, enjoyment, involvement, learning, worries, and

values.

Limitations and Future Studies

This study is subject to certain constraints. We restricted our review to publications released between January 2015 and March 2023, limited our database selection to ERIC, Education Source, and Scopus, and exclusively included papers published in English. Consequently, it is imperative to acknowledge that there may exist relevant publications beyond the scope of this study that have not been considered. Therefore, we recommend conducting additional reviews encompassing a more comprehensive range of publication years, utilising diverse databases, and including multiple languages extending beyond English. This comprehensive approach will facilitate a more profound and extensive investigation into parents' perceptions of their children's technology use.

Conclusion

Parents maintain a love-hate relationship with their children's technology usage. They perceive technology as beneficial for enhancing their children's education while expressing concerns about potential health issues and reduced outdoor activities. Moreover, parents appreciate technology's convenience but grapple with worries regarding financial implications and managing their children's tech usage. However, their perceptions can vary depending on their children's age and may also be related to the parents' educational background. These factors can introduce variability in their perceptions. The interplay among different systems or layers surrounding an individual indicates that parental perspectives on technology can influence home and school environments. This also implies that educators must comprehend parental viewpoints and delve further into the underlying reasons for these perspectives. This, in turn, can assist educators in better understanding parents, fostering collaboration between educators and parents, improving teaching strategies, and working together with parents to enhance the well-being of children during their formative years. Therefore, future research aimed at advanced pedagogy should also consider the role of parents and seek to understand the origins of their perspectives. Therefore, when drawing digital technologies into an early childhood setting, it will be necessary for teachers to consider the diversity of perceptions and be supportive and sensitive to this. Therefore, drawing on research-informed approaches will ensure that parents feel reassured that their concerns are being met and considered. Teachers, therefore, need training on how to critically evaluate and balance the advantages and disadvantages, making informed decisions about when and how to use technology in the classroom. To facilitate productive communication with parents, tertiary institutions should help pre-and in-service teachers understand and appreciate these varied perspectives. Teachers, therefore, have an essential role in educating parents about the appropriate and responsible use of digital technology in the early years (Schriever, 2021; Daniels et al., 2021). This involves fostering open dialogue, sharing research-based evidence on the benefits of technology integration, and addressing parents' misconceptions or fears. So, while the research has shown that parents have different styles (active or restrictive) of mediation, there must be a partnership between teachers and parents around how the use of digital tools and that good practice is adopted in early childhood centres but also one that feeds into the home (Daniels et al., 2021). Therefore, tertiary institutions should equip pre-service teachers with the knowledge and skills to foster digital literacy in young children (Thorpe et al., 2015; Daniels et al., 2021). Digital literacy goes beyond merely using technology and involves understanding how to use it safely, responsibly, and effectively. So, teachers can promote digital literacy by guiding children using the tools and encouraging positive behaviour and engagement. They also need to guide the types of technologies used in the school and support a deeper awareness of appropriate tools and approaches in the home. As technology evolves rapidly, tertiary institutions should support teachers to build these capabilities to support this navigation and develop practice.

References

- Abed, M. G., & Shackelford, T. K. (2021). Saudi parents' perspectives on the use of touch screen tablets for children with learning disabilities. *International Journal of Inclusive Education*, 1–15. <https://doi.org/10.1080/13603116.2021.1991491>
- Brito, R., & Dias, P. (2020). "Which apps are good for my children?": How the parents of young children select apps. *International Journal of Child-Computer Interaction*, 26, 100188. <https://doi.org/10.1016/j.ijcci.2020.100188>
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513–531. <https://doi.org/10.1037/0003-066x.32.7.513>
- Burke, A., & Marsh, J. (2013). *Children's Virtual Play Worlds Culture, Learning, and Participation: New Literacies and Digital Epistemologies*. Volume 58. Peter Lang Publishing Group.

- Chen, W., Teo, M. H., & Nguyen, D. (2019). Singapore Parents' Use of Digital Devices with Young Children: Motivations and Uses. *The Asia-Pacific Education Researcher*, 28(3), 239–250. <https://doi.org/10.1007/s40299-019-00432-w>
- Covolo, L., Zaniboni, D., Roncali, J., Mapelli, V., Ceretti, E., & Gelatti, U. (2021). Parents and Mobile Devices, from Theory to Practice: Comparison between Perception and Attitudes to 0–5 Year Old Children's Use. *International Journal of Environmental Research and Public Health*, 18(7), 3440. <https://doi.org/10.3390/ijerph18073440>
- Dardanou, M., Unstad, T., Brito, R., Dias, P., Fotakopoulou, O., Sakata, Y., & O'Connor, J. (2020). Use of touchscreen technology by 0–3-year-old children: Parents' practices and perspectives in Norway, Portugal and Japan. *Journal of Early Childhood Literacy*, 20(3), 551–573. <https://doi.org/10.1177/1468798420938445>
- DeShelter, L., & Slutsky, R. (2017). Should Technology Be a Concern for Parents of Preschoolers?. *Dimensions of Early Childhood*, 45(2), 29–36.
- Donohue, T. H., & Aladé, F. (2021). Exploring Caregiver Perceptions of a One-to-One Tablet Program for Kindergartners. *Early Childhood Education Journal*, 50(8), 1279–1289. <https://doi.org/10.1007/s10643-021-01256-4>
- Gjelaj, M., Buza, K., Shatri, K., & Zabeli, N. (2020). Digital Technologies in Early Childhood: Attitudes and Practices of Parents and Teachers in Kosovo. *International Journal of Instruction*, 13(1), 165–184. <https://doi.org/10.29333/iji.2020.13111a>
- Güneş, G. (2020). Is the digitalization of play technological mutation or digital evolution? *Early Child Development and Care*, 192(4), 638–652. <https://doi.org/10.1080/03004430.2020.1787402>
- Istenič, A., Rosanda, V., Volk, M., & Gačnik, M. (2023). Parental Perceptions of Child's Play in the Post-Digital Era: Parents' Dilemma with Digital Formats Informing the Kindergarten Curriculum. *Children*, 10(1), 101. <https://doi.org/10.3390/children10010101>
- Kotrla Topić, M., Perković Kovačević, M., & Duvnjak, I. (2020). A two-point study of parental perception of digital technology in Croatian preschool children. *Hrvatska Revija Za Rehabilitacijska Istraživanja*, 55(2), 1–13. <https://doi.org/10.31299/hrri.55.2.1>
- Kucirkova, N., Littleton, K., & Kyparissiadis, A. (2018). The influence of children's gender and age on children's use of digital media at home. *British Journal of Educational Technology*, 49(3), 545–559. <https://doi.org/10.1111/bjet.12543>
- McCloskey, M., Johnson, S. L., Benz, C., Thompson, D. A., Chamberlin, B., Clark, L., & Bellows, L. L. (2018). Parent Perceptions of Mobile Device Use Among Preschool-Aged Children in Rural Head Start Centers. *Journal of Nutrition Education and Behavior*, 50(1), 83–89.e1. <https://doi.org/10.1016/j.jneb.2017.03.006>
- MIKELIĆ PRERADOVIĆ, N., LEŠIN, G., & ŠAGUD, M. (2016). Investigating Parents' Attitudes towards Digital Technology Use in Early Childhood: A Case Study from Croatia. *Informatics in Education*, 15(1), 127–146. <https://doi.org/10.15388/infedu.2016.07>
- Ministry of Education. (n.d.). *Te Whāriki online – Hangarau matihiko: Digital technologies*. TKI. <https://tewhariki.tki.org.nz/en/teaching-strategies-and-resources/communication/digital-technologies/>
- Papadakis, S., Zaranis, N., & Kalogiannakis, M. (2019). Parental involvement and attitudes towards young Greek children's mobile usage. *International Journal of Child-Computer Interaction*, 22, 100144. <https://doi.org/10.1016/j.ijcci.2019.100144>
- Plowman, L., Stevenson, O., Stephen, C., & McPake, J. (2012). Preschool children's learning with technology at home. *Computers & Education*, 59(1), 30–37. <https://doi.org/10.1016/j.compedu.2011.11.014>
- Radesky, J. S., Schumacher, J., & Zuckerman, B. (2015). Mobile and Interactive Media Use by Young Children: The Good, the Bad, and the Unknown. *Pediatrics*, 135(1), 1–3. <https://doi.org/10.1542/peds.2014-2251>
- Sadykova, G., Gimaltdinova, G., Khalitova, L., & Kayumova, A. (2016). Integrating mobile technologies into very young second language learners' curriculum. *CALL communities and culture—short papers from EUROCALL*, 408–412. Research-publishing.net.
- Stewart, T., Duncan, S., Walker, C., Berry, S., & Schofield, G. (2019). *Effects of screen time on preschool health and development*. Ministry of Social Development, New Zealand.
- Vaiopoulou, J., Papadakis, S., Sifaki, E., Stamovlasis, D., & Kalogiannakis, M. (2021). Parents' Perceptions of Educational Apps Use for Kindergarten Children: Development and Validation of a New Instrument (PEAU-p) and Exploration of Parents' Profiles. *Behavioral Sciences*, 11(6), 82. <https://doi.org/10.3390/bs11060082>
- Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X., Lee, J. H., & Shim, M. S. (2007). Digital Childhood: Electronic Media and Technology Use Among Infants, Toddlers, and Preschoolers. *Pediatrics*, 119(5), e1006–e1015. <https://doi.org/10.1542/peds.2006-1804>
- Vittrup, B., Snider, S., Rose, K. K., & Rippy, J. (2016). Parental perceptions of the role of media and technology in their young children's lives. *Journal of Early Childhood Research*, 14(1), 43–54. <https://doi.org/10.1177/1476718x14523749>

White, J. (2022). The Opinions and Perceptions of K1-3 Parents in Relation to BYOD Implementation in Japanese Kindergartens. *International Journal of TESOL & Education*, 2(1), 1–22.
<https://doi.org/10.54855/ijte2202011>

Chen, R. & MacCallum, K. (2023). Parental perceptions on children's use of digital technology: A systematic review. In T. Cochrane, V. Narayan, C. Brown, K. MacCallum, E. Bone, C. Deneen, R. Vanderburg, & B. Hurren (Eds.), *People, partnerships and pedagogies*. Proceedings ASCILITE 2023. Christchurch (pp. 334–339).
<https://doi.org/10.14742/apubs.2023.715>

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