# Children's educational and recreational engagement with digital technology and its potential learning and developmental outcomes from the perspective of practitioners and parents

by

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**Declaration**

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date 31/03/2025

STATEMENT 1

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**Abstract**

Children's play in contemporary society is influenced by digital devices, both in their homes and educational settings, including preschool children. This thesis explores children's digital play within and outside of educational settings from the perspective of practitioners and parents, addressing gaps in understanding how children's digital play in different environments and their potential learning and developmental outcomes. Adopting a mixed-method approach, the thesis combines quantitative and qualitative research to provide a holistic understanding of digital play. Quantitative data consisted of 188 parents who attended the online survey, while qualitative data were gathered through semi-structured interviews with 11 parents and 12 practitioners.

Quantitative data were analysed using chi-square tests, with Gamma used for ordinal relationships and Cramer's V for measuring the strength of associations between nominal variables. It demonstrated that older children spend more time using computers and reading/writing apps. Boys spent more time playing video games, whereas girls preferred drawing apps.

Qualitative data were analysed employing thematic analysis, and Bronfenbrenner's Ecological Systems Theory (EST) was adapted to contextualise digital play. Qualitative data identified the similarities and differences between digital engagement at home and in school. Both parents and practitioners asserted the value of educational and recreational engagement. They reported the impacts of recreational and educational engagement on children's cognitive, language, creative, social-emotional, and physical development, including problem-solving skills, language acquisition, imagination and social-emotional skills. Educational engagement was more structured and goal-driven, while recreational play allowed more child autonomy. Furthermore, parents and practitioners raised concerns about the negative consequences of excessive screen time and inappropriate content, such as addiction, negative behaviours, speech delay and reduced attention span. Practitioners underscored the importance of parental active mediation and involvement in children's digital play to mitigate adverse effects. Although the data aim to investigate micro- and meso-systems of children's digital play, the findings also reveal influences from the exosystem, macrosystem, and chronosystem, such as school conditions, the effects of cultural norms and the COVID-19 pandemic. Overall, understanding digital play through EST offers a multi-dimensional perspective by incorporating parents, practitioners and policymakers, providing valuable implications for educational practice and policy development.

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**Abbreviations**

**AAP:** American Academy of Paediatrics

**AI:** Artificial Intelligence

**ECE**: Early Childhood Education

**EST:** Ecological Systems Theory

**ICT:** Information and Communication Technology

**NVivo:** Qualitative Data Analysis Software

**PIS:** Participant Information Sheet

**PPCT:** Process–Person–Context–Time Model

**SES:** Socioeconomic Status

**SPSS:** Statistical Package for the Social Sciences

**UNESCO:** United Nations Educational, Scientific and Cultural Organisation

**UK GDPR:** United Kingdom General Data Protection Regulation

**EBA:** Education Informatics Network (based in Türkiye)

**e-Twinning:** European School Collaboration Platform

**EYFS:** Early Years Foundation Stage

**DfE:** Department for Education

**FG:** Focus Group

**ICTs:** Information and Communication Technologies

**RQ:** Research Question

**UoE:** University of Edinburgh

**SPICE:** Social, Physical, Intellectual, Creativity, Emotional

**DT:** Digital Technology

# CHAPTER 1 INTRODUCTION

## 1.1. Background and Rationale of Study

Play is the most critical feature of children's lives, contributing to their health and development (Cohen, 2019; Cowie, 2019; McInnes et al., 2009; Singer, 2013). The term "play" has been mentioned, defined or discussed by scholars from various disciplines (Genovese, 2003; Göncü & Gaskins, 2012; Lourenço, 2012). Over time, scholars and educators from different disciplines have structured their understanding of play. To illustrate, while Piaget explained how children construct their knowledge through their play, Vygotsky highlighted the social value of play (Edwards & Cutter-Mackenzie, 2013; Fleer, 2016; Semmar & Al-Thani, 2015). Modern scholars compiled and categorized previous discussions on play, according to its benefits and functions: educational, recreational, therapeutic (Cohen, 2019; Howard & McInnes, 2013). Considering all these functions, play is a crucial element of children's lives, supporting cognitive, social, emotional, language and physical development and well-being.

With the advent of technology, children are surrounded by various types of devices, such as TVs, computers, and electronic toys. However, with the widespread use of smartphones, children are engaging with technological devices more than ever (Ofcom, 2019). Even toddlers and infants engage with these digital devices. The survey provided insight into the amount of time children spend using technology. The time children spend using these devices has dramatically increased over the years (Livingstone et al., 2014; Ofcom, 2024). Scholars shifted their attention to learning and development value in the digital environment, instead of just considering the time spent using those devices. Consequently, children are introduced to new objects to play which leads to a new form of play: digital play. Scholars discussed digital play and categorised it as a new form of play (e.g. Cohen, 2019; Howard & McInnes, 2013). Others indicate that technology is not a new form of play but rather transforms the nature of existing play types (Marsh et al., 2016; Stephen & Plowman, 2014).

On the one hand, studies suggest that digital play is not as valuable as traditional, reporting excessive screen time negatively affects children's development and health (Axelsson et al., 2022; LeBourgeois et al., 2017; Lissak, 2018). Spending prolonged

periods with technology in the early years is suggested to result in serious health problems, such as sleep problems, anti-social behaviour, addiction, and obesity (Chaput et al., 2011; Coplan, 2009; Wolf et al., 2018). On the other hand, research indicates that digital play contributes to development and learning in young children, improving problem-solving and logical thinking (Liu & Iversen, 2022; Nouri et al., 2020; Oliemat et al., 2018).

Studies reported that the engagement type is considered critical, highlighting that passive engagement, where children watch the screen without actively participating, is considered to negatively influence children's development. Active engagement, on the other hand, contributes to supporting children's cognitive and social development. (Loudoun et al., 2023; Souto et al., 2020; Yadav & Chakraborty, 2022). The pros and cons of digital play underscore the importance of understanding digital play to maximise its advantages and avoid the potential risks technology brings.

Considering this, although the effect of "digital play" remains mysterious, the rationale for studying digital play seems crystal clear. Parents, practitioners, and policymakers face significant challenges and raise important questions regarding the role of technology in children's education and everyday lives. Understanding the way children encounter digital media, educational or recreational, and how effective these interactions contribute to their development and well-being is crucial for developing informed and constructive approaches to digital technology use. Gaining insight from traditional and modern play theories, considering development theories might be a key to understanding play in the digital context. Regarding both the educational and recreational value of play and their contribution to children's social, emotional, cognitive, language and physical development, this study aims to understand children's play in digital environments and its contribution to their learning and development.

Geographically, this study focuses on the Turkish context, in which children's experiences with digital devices are affected by various factors, including cultural factors, the educational system, politics, social expectations and dynamics in families and schools. In their report, The Ministiry of Education (MEB) clearly demonstrates the aim of early childhood education in Türkiye as follows.

*Early childhood education in Türkiye covers children aged 36–72 months and is structured as a developmental, child-centred, and play-based educational process. The primary aim of the programme is to support children's holistic development, including cognitive, language, motor, and social-emotional domains, to foster self-care skills, and to prepare children for primary education* (Turkish Ministry of National Education, 2019).

However, the use of digital technology in early childhood education is influenced by various factors, including practitioners' pedagogical beliefs and the availability of hardware and software. Moreover, children's experience with digital media occurs at home, where parental attitudes, cultural values, and access to digital media platforms play a significant role. Consequently, the Turkish context offers a valuable setting for examining how young children's digital engagement is negotiated across educational and home settings. Furthermore, the study aims examine how cultural and contextual factors shape preschool children's digital experience. In doing so, this study aims to demonstrate how parents and practitioners consider educational, recreational and possibly therapeutic dimensions of digital play, and how cultural values and contextual expectations shape these meanings.

### 1.2. Problem Statement

Despite considering the critical role of digital technology in young children's daily lives and educational settings, there is still a gap in understanding how children's digital play is similar to or different across contexts, and the contribution it makes in each setting remains unclear. Existing literature primarily provides valuable insight into children's digital play at home (e.g. Dunn et al., 2018; Işıkoğlu et al., 2023; Konca & Tantekin Erden, 2021) and in preschool settings (e.g. Lawrence, 2018; Leif Marklund, 2020; Marklund & Dunkels, 2016) without comparing these settings with their similarities and differences. However, rather than existing in isolation, home and school environments in early childhood are deeply interconnected, and the experience in each setting affects the other (Neumann & Neumann, 2017; Plowman et al., 2010). Children's digital play in these immediate environments might have similarities and differences. While a home setting may allow children to make their own decisions, in terms of deciding what game

to play or what video to watch, a school setting provides more structured and goal-oriented experiences. These contextual differences offer new areas to investigate. These include the similarities and differences in digital play across home and school environments, the different types of play that occur in each setting, and whether parental practices at home and practitioners' attitudes toward technology are aligned or not.

In the home setting, parents mediate their children's digital play by allowing access to devices, setting time limitations, and deciding what content is appropriate (Dias et al., 2016; Neumann, 2018; Zaman et al., 2016). In school settings, practitioners determine what, how, and when digital devices are used, depending on their attitudes toward technology (Ertmer et al., 2012; Undheim, 2022). These two groups have a significant impact on children's digital play. However, there is a lack of research comparing how parents and practitioners agree or differ in their attitudes toward digital engagement, and how such alignments or mismatches may influence children's learning and development.

Moreover, research investigating the effect of digital play on children's learning and development relies on screen time (Brushe et al., 2024; Dy et al., 2023; Rocha & Nunes, 2020). The various types of apps available to children, from open-ended sandbox games (Baek & Touati, 2017) to literacy apps (Neumann, 2014). Although both types of these apps can be developmentally beneficial, there is limited research on how they are practically differentiated and where they overlap.

To sum up, digital play should be investigated within the broader social and environmental context that may affect children's digital experience and their development and well-being. In this regard, this may be considered a gap in the literature, including the Turkish context, as studies that comparatively examine the educational and recreational dimensions of digital play from the perspectives of different adults, practitioners and parents, who play a central role in children's digital experiences, remain limited, which this study seeks to address.

### 1.3. Research Questions and Aims

To address the problem discussed above, this study aims to explore children's digital engagement, including both educational and recreational uses, from the perspective of practitioners and parents. Thus, both educational and recreational engagements, as well

as home and school contexts, require further exploration to understand their developmental implications. 3 main research questions are identified to address this problem.

1- In what way do practitioners and parents report children use technology within and outside of the educational context?
2- What are practitioners' and parents' perspectives on children's use of digital technologies within and outside an educational context, and their potential learning and developmental outcomes?
3- What factors do parents and practitioners believe impact children's engagement with digital devices?

### 1.4. Theoretical Framework

To understand children's digital play in different environments, this study adopts Bronfenbrenner's Ecological System Theory (EST) as a theoretical framework. Bronfenbrenner (1979) suggests that children's development is shaped by a set of nested environmental systems, including their immediate environment to broad cultural and temporal influences, as it explains different layers of environment:

**Microsystem:** Microsystem(s) are children's immediate environments that they directly experience, such as home and school. Actors such as parents and practitioners have a direct impact on children's learning and development.

**Mesosystem:** This represents connections between children's immediate environments (microsystems). In this study, it means the connection between school and home.

**Exosystem:** This is the external environment that affects children indirectly through someone in their immediate environment. To illustrate, although parents' workplace is not children's immediate environment, they might be affected by the stress parents bring home.

**Macrosystem:** This includes broader social, cultural values, norms and policies. To illustrate, cultural beliefs about children. While some cultures may allow children independence, others might apply strict rules.

**Chronosystem:** This consists of the environmental events and transitions that occur throughout children's lives, such as parental divorce, the COVID-19 pandemic, and war.

The effect of this event in children's immediate environments contributes to their development and learning. To illustrate, the pandemic distracted the traditional education.

This framework allows understanding children's digital play in different environments since it enables contextualised analysis of different environments as explained above. EST helps in investigating the similarities and differences in children's digital play considering different environments as well as the connections between those environments. According to Bronfenbrenner, children's development is directly related to interaction within these environments. At the core of this model is the concept of "proximal processes", which are considered to be key elements of development. As Bronfenbrenner and Morris (2006) state:

*"Human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment. To be effective, the interaction must occur on a fairly regular basis over extended periods of time. Such enduring forms of interaction in the immediate environment are referred to as proximal processes"* (p. 797).

These interaction goes beyond people-people interaction. It also helps in understanding children's interaction with objects, which represent digital devices in this study, and symbolic environments, which are educational and recreational content for this research. All these interactions are critical contributing children's development.

In summary, both the EST system as the theoretical framework and the proximal process provide valuable tools for analysing children's digital play and their potential learning and developmental outcomes. Reconsidering digital play in different layered environments (e.g. micro, meso) with different elements of interactions (e.g. child-devices, child-parents) helps contextualise digital play as a socially and environmentally embedded experience.

While Bronfenbrenner's Ecological System Theory provides the theoretical foundation of this study and opportunities to investigate children's digital play in different environments, from the perspectives of adults, Howard and McInnes's (2013) categorisation of play (educational, recreational, therapeutic) is employed as a

complementary analytic framework to contextualise digital play types. This typology will be further discussed in the literature review section. EST is adopted to investigate children's digital play in different environments, while Howard and McInnes's (2013) categorisation of play is used to categorise the play types that children engage in different environments. To illustrate, within the home microsystem, parents may describe digital play as mainly recreational, whereas in the school microsystem, practitioners may highlight the educational value of digital play. In this sense, the typology relies on and is influenced by the wider ecological systems (EST). To aum up, rather than being applied directly to children's digital play, categorisation of Howard and McInnes (2013) is employed in this study to analyse parents' and practitioners' discourses on digital play, focusing on how adults assign educational, recreational, and therapeutic value, if available, within various ecological settings.

### 1.5. Thesis Structure

This thesis consists of the following chapters above.

**Chapter 1: Introduction**

This chapter explains the rationale for this study as well as the objectives of the research questions. The theoretical framework and the reason behind adopting it are also discussed briefly.

**Chapter 2: Literature Review**

The literature chapter begins the discussion of *children* and *play* as a term and moves towards more comprehensive theoretical perspectives of play and its contributions to children's learning, development, and well-being. Starting from a broader stance, it provides a narrative of children's play from historical to the present day. It provides insight into how digital technology has changed children's lives and their play. Understanding developmental theories is a valuable tool to interpret and analyse children's play in the digital context. Finally, it focuses on children's play in a digital context to understand children's educational and recreational engagements with digital devices and their contributions to development and learning.

**Chapter 3 Methodology**

Revisiting the research question, the methodology chapters explain the research process. It justifies the reason behind the adoption of the research method, data collection and analysis methodology. It also explains the ethical process of conducting research.

**Chapter 4 Findings**

This chapter demonstrates both quantitative and qualitative data from the findings. The results explain the narrative of children's development thematically in addition to the statistical data provided on demographic factors.

**Chapter 5 Discussion**

This chapter begins with connecting key findings and research questions. Afterwards, employing EST it discusses the findings in relation to existing literature and theory, with similarities and differences.

**Chapter 6 Conclusion**

Finally, the conclusion addresses the implications of theory, practice and policy, highlighting the importance of the thesis and its contribution to the literature. It also criticized the limitations of the thesis and provide further research recommendations.

# CHAPTER 2: LITERATURE REVIEW

## 2.1. Introduction

Play is recognized as one of the most important elements of children's lives that supports healthy development and learning, contributing to physical, cognitive, social and emotional growth. Over the years, the definition of play has been discussed by early philosophers such as Plato and Rousseau to developmental theorists or psychologists such as Piaget, Vygotsky and Erikson who discussed the role of play within broader aspects, considering it as a way of understanding the world and themselves. From classic to modern theories, play is categorised into different categories. Howard and McInnes (2013) categorised play theories into 3 main categories: educational, recreational, and therapeutic, each reflecting different aspects of play. Over time, play has evolved with technological advancements. Initially, digital play emerged with computers in the 1980s-2000s. However, beginning in 2010, the launch of touchscreen devices transformed children's play experience, introducing a digital context with diverse applications (Chu et al., 2024).

This chapter consists of 4 sections. Section 1 focuses on theoretical perspectives of play and playfulness and play types as well as development theories related to play and playfulness. The following sections then focus on digital play. Section 2 delves into statistics about children's digital engagement and current trends of technological engagement among children. Moreover, it discusses different aspects of digital play synthesizing traditional theories of play with current research on digital engagement as well as digital play theories which acknowledge different types of play in the digital context. Section 3 discusses the positive and negative impact of digital engagement on children's development and learning. Finally, Section 4 demonstrates the environmental and social factors that affect children's digital engagement.

## 2.2. Theoretical Perspective of Play and Child Development

### 2.2.1. History of Play and Childhood

Play as a subject has been defined and discussed in divorce approaches from ancient Greek philosophers such as Plato and Aristotle. However, Plato did not consider play as

an important activity (Cohen, 2019). According to him, a play was just an activity for women to amuse infants. Play as a term was first seriously considered and discussed in education and children's lives by French philosopher Jean-Jacques Rousseau, suggesting that play is an activity for children to freely explore and develop themselves (Cohen, 2019). To date, the term play has been defined and theorised by various groups of professionals, such as philosophers, psychologists, and educators throughout history (Howard & McInnes, 2013). Each of these theories and definitions of play has enabled us to evaluate and perceive play from different perspectives, which will be discussed further.

Mellou (1994) divided play theories into classical and modern theories. They suggest that while classical theories aim to investigate the reason behind the existence and function of play, modern theories seek to explain the role of play in child development (Mellou, 1994). However, this categorisation is not up to date. Alternatively, Cohen (2019) indicated that studies related to play primarily focus on three key areas: the cognitive benefits of play, the emotional significance of play, and its social importance. Similarly, Howard and McInnes (2013) categorised play theorists into 3 categories: theorists of therapeutic play practice, theorists of educational play practice, and theorists of recreational play practice.

According to some scholars, defining play is not achievable or possible (Pellegrini et al., 2007). On the other hand, some theorists attempt to bring a definition to play or to standardise the concept of play (Eberle, 2014). The work of Huizinga "Homo Lundens" is suggested to revolutionize the understanding of play as a cultural phenomenon, affecting modern play theorists by highlighting its integral role in the formation and development of human society (Singer, 2013). Giving an example from an animal's play, Huizinga (1955) suggests that the reason to play is to experience and live through subjective emotions such as excitement, risk, relaxation, and more. He refuses the idea of psychological and biological theories that seek to explain why play exists and what it does by focusing on its supposed purpose and the benefits of playing. He challenges the idea that play occurs since children need to consume their energy, which is claimed by classical play theorists such as Spencer (1878) and Lazarus (1883) (cited in Stagnitti, 2004).

Some indicated the prominent aspects of play. To illustrate, Thomas Henrichs in his book Play Reconsidered (2006) indicated five basic qualities of play: *play is purposeless, voluntary, outside the ordinary, fun, and focused by rules* (Eberle, 2014, p. 215). However, these play principles do not tell us how to perceive whether an activity is play or not. On the contrary, some theorists consider it a purposeful activity. To illustrate, educator theorists of play, such as Froebel and Montessori, consider play as a purposive activity, aiding children's learning while having fun (Cohen, 2019).
Some scholars, on the other hand, aim to give definitions of play types that children encounter instead of fully focusing on the nature of play. To illustrate, Piaget (1951) classified play into three categories: functional play, symbolic play, and constructive play, whereas Hughes (2006) categorised play into 16 groups (Marsh et al., 2016). However, although these discussions on play's nature and classifications of play are useful for understanding children's play, they might not be particularly helpful for play practitioners (Howard & McInnes, 2013). Play practitioners discuss providing the right conditions and context for children to play, recognise play as behaviours, and consider it a quality or a method of highlighting the positive feelings of self and well-being that accompany engaging in play. Although there are differences in play definition and characteristics, play practitioners would agree that play is a process. However, this has fostered different ideas about how the process is defined and how it takes place (Farland-Smith, 2003). This topic will be addressed further while discussing play theories. These historical shifts demonstrate that the term play has never been considered as a singular concept. However, it may be understood as an activity attributed with educational, recreational, and therapeutic meanings across different theoretical traditions.

### 2.2.2. Shifting Views of the Child: From Object to Social Agent

There have been different approaches to the concept of child studies related to children. These approaches are generally discussed in the fields of psychology, sociology, and pedagogy. Because of their nature of aiming to provide universal knowledge and results, physical and biological studies consider a child as an object (Kennedy, 2006). However, how the scientific world considers children cannot just be discussed epistemologically. It

is also political (Kennedy, 2006) and depends on the dominant views and needs of each era (Howard & McInnes, 2013). While Locke considers the child as a *tabula rosa* which means a blank slate, Jean-Jacques Rousseau views children as inherently innocent and pure. Moreover, cultural, and religious elements have influenced the perception of children throughout history. To illustrate, in Athenian culture children were seen as messengers of God, while today they are considered as future citizens (Kennedy, 2006). In this information era, there has been a shift in the perception of children and childhood, considering them as products of social and cultural influences. However, there is a debate about whether children are seen as evolving through a natural developmental process towards adulthood or as autonomous individuals with their own distinct identities (Farland-Smith, 2003). Moreover, in contemporary discussions children are regarded as proactive participants in their own experiences and lives, advocating for their voices to be acknowledged and respected by those who are involved in studies related to children (Woodhead, 1999).

### 2.2.3. Play Theories and Theorist

Within academic discourse, multiple disciplinary domains have examined and theorised the notion of play. Over time, these fields have been criticised and influenced by each other. Play theories and theorists have been categorised in different ways within the literature (e.g. Cohen, 2019; Howard & McInnes, 2013; Mellou, 1994). Although it is challenging to establish a precise distinction between these theories, this study will discuss various perspectives by categorising them into three groups: 1) recreational play theories 2) educational play theories, and 3) therapeutic play theories. This categorisation is adapted to provide a conceptual basis for discussing how play is discursively constructed as educational, recreational, or therapeutic.

#### 2.2.3.1. Recreational Play Theories

Despite criticism and rejection, the biological perspective on play offers diverse insights that enhance our understanding of play from multiple angles. Throughout the history of play, three main theories have emerged regarding the biological perspective of play behaviours: surplus energy, instinct-practice, and recapitulation (Graham & Burghardt,

2010). Spencer (1872) suggested that animals and humans play to expend energy. Gross (1898, 1901) and Morris (1928) claim that play is an instinctive behaviour to discover and experience the world (Graham & Burghardt, 2010; Howard & McInnes, 2013). Burhardt's work on play in both animals and humans indicates that play needs a clear definition. According to his work, play can be characterized by the following criteria (Graham & Burghardt, 2010, p. 394):

*(1) incompletely functional in the context in which it appears; (2) spontaneous, pleasurable, rewarding, or voluntary; (3) differs from other more serious behaviours in form (e.g., exaggerated) or timing (e.g., occurring early in life before the more serious version is needed); (4) is repeated, but not in abnormal and unvarying stereotypic form (e.g., rocking or pacing); and (5) is initiated in the absence of severe stress.*

These characteristics provide a robust definition of play, distinguishing it from other behaviours and highlighting its role in development, learning and well-being in both animals and humans.

#### 2.2.3.2. Educational Play Theories

Friedric Froebel is one of the most important theorists in early childhood education and the founder of the kindergarten system. Frobel suggests children learn best through free activities (or free play) and education should aid their natural curiosity and development (Watts, 2022). He suggests that play affects numerous development areas such as physical, mental, moral, motor and social (Dar, 2018). Moreover, he also focused on the importance of nature and created wooden blocks for children as a material with endless possibilities to aid open-ended play. However, instead of directing children, he indicates the recreational nature of play (Dar, 2018).

Dewey (1933) discussed the relation between play, playfulness and work in his book. According to Dewey, play and work are inherently interconnected, with play serving as a foundation of all education. He suggests that both play and work are critical for individual development and society's expectations of children (Beatty, 2017). He advocated for guided free play (free play guided by practitioners) to bridge the gap between children's freedom and social control. Furthermore, Dewey distinguishes the concept of playfulness from play and asserts that "*Playfulness is a more important*

*consideration than play. The former is an attitude of mind, and the latter is a passing outward manifestation of this attitude*." (1933, p. 162). Dividing the terms play and playful opens a new discussion that will be discussed further.

Maria Montessori is another critical educational play theorist who primarily focuses on preschool children. Like Froebel, Montessori indicates that children need the freedom to choose what they want to play (Isaacs, 2018). However, she considers play to be a form of work. Although children are free to choose the material they want to engage with, they must use real-life materials and should use them in the way that they are intended to be used (Isaacs, 2018). Unlike Froebel, Montessori considers pretend or imaginative play as a tool to aid children in understanding realities and engaging in real-life activities (Lillard & Taggart, 2019).

Piaget and Vygotsky are psychologists whose ideas have been effective in education - including preschool education - and children's development (Semmar & Al-Thani, 2015). Both these psychologists stress the critical role of imaginative/symbolic play. Piaget indicates that there are stages in children's cognitive development and how play may change depending on which stage children are in (Matusov & Hayes, 2000). According to Piaget, children construct their knowledge. The function of play is for children to practice what they already know and provide them with different scenarios and rules. It also aids them in developing problem-solving skills and understanding the social world (Gaskins & Göncü, 1988).

On the other hand, Vygotsky indicated a different view on play, emphasizing the social and cultural aspects of play. Vygotsky expresses that play "… contains all developmental tendencies in a condensed form and is itself a major source of development (Vygotsky, 1978, p. 102). Moreover, unlike Piaget, Vygotsky considers imaginative play as an essential activity for children in terms of their learning and development.

Susan Isaacs is another critical psychologist who has tremendous effects on early years education, focusing on the social and biological value of play (Gray, 2022). She identified two main components in children's play activities. First, what she called 'circumstantial relation' from observation of children's play, suggests that children learn by mimicking elements of the environment. The second one is what she calls the

‘conative nexus of thought and phantasy’. This entails children engaging in an instinctive narrative during play that enables them to understand their environment and social relationships around them (Gray, 2022).

#### 2.2.3.3. Therapeutic Play Theories

Sigmund Freud indicated the value of imaginative play on children’s emotional development and creativity. Moreover, he suggested that within the context of the play, children would act out traumatic events, thus gaining control over them. His work was developed by his daughter Anna Freud, who used play techniques in child psychotherapy (Russ, 2004).

Russ (2004) indicates that in child therapy literature, four main roles of play are identified as significant in the therapeutic process. First, Chethik (1989) referred to the language of play and suggested that children express their feelings and thoughts throughout the play. Moreover, he suggested that play emerges from the child’s internal life and reflects the child’s internal world (Russ, 2004). Second, Chethik and Anna Freud suggest that children utilise play to communicate with the therapist. According to them, therapists must understand children’s communication via play (Russ, 2004) which strengthens the communication between the therapist and child (Howard & McInnes, 2013).

A third significant role of play is serving as a means for gaining insight and working through issues. This function of play is conceptualised from a psychodynamic perspective. According to this perspective, resolving emotional conflicts or traumas is a critical mechanism for change in child therapy. In a therapy process, children demonstrate major developmental conflicts or traumas. Many of them are expressed via play. The play process is considered as a method of conflict resolution. To illustrate, play therapy theorists such as Freeheim and Russ (1992) and Erikson (1963) indicate that children play to overcome the conflicts or traumas they have experienced during the day. During this process, the therapist identifies the child's conflicts and interprets the play. Even though there is some debate in psychodynamic literature about the extent of interpretation required, it is widely agreed that working through issues and achieving mastery are key mechanisms for change in play therapy (Russ, 2004).

A fourth role of play in therapy is offering opportunities to practice a range of ideas, behaviours, interpersonal interactions, and verbal expressions. As the play takes place in a safe and imaginative environment with a permissive and non-judgmental adult, children can explore and practice different expressions and behaviours without worrying about real-life consequences. In some forms of play therapy, the therapist is quite directive in guiding the child to try new behaviours. To illustrate, Knell (1993) developed a cognitive behavioural play therapy approach that actively utilizes modelling techniques and a variety of cognitive behavioural strategies (Russ, 2004).
On the other hand, some theorists such as Axline (1947) and Moustakas (1959) claim that children can heal themselves and suggest that the role of the therapist is to encourage children to take responsibility for their decisions in the playroom which is considered child-centred therapy (Jhonson, 2016).

### 2.2.4. Play and Children's Development

In the previous phase, the play theories and theorists are discussed. People from different areas discussed play in terms of its value. While some indicate the educational value of play, others discuss the therapeutic benefits of play. Their common feature was the value of play in children's lives and its contribution to their learning and development. Various children's learning and development theories support this connection between play and development. For instance, Piaget emphasized the role of play in cognitive development, in which children learn about the world through interacting with their environment. Lev Vygotsky highlighted the importance of social play supporting social and language development through the Zone of Proximal Development (Lourenço, 2012; Semmar & Al-Thani, 2015). Moreover, Erik Erikson's psychosocial theory suggests that play is critical for children to navigate and master different social and emotional development stages (Batra, 2013; Khairani & Maemonah, 2021). These theories collectively underscore the multifaceted role of play in fostering SPICE which stands for 1) social development, 2) physical development, 3) intellectual development, 4) communication and language development, and 5) emotional development (e.g. Adebayo, 2022). In addition to being a tool for describing and explaining behaviours, theories might be utilised to predict behaviours in various situations and should therefore

be testable. From this aspect, theories are useful since predicting the factors that affect children's health and development allows us to plan effective policies and practices (Howard & McInnes, 2013). Furthermore, theories enable us to understand and interpret how the concept of play evolves according to the age of children. In this part, some of these play theories will be discussed.

Erik Erikson proposed a psychosocial development theory connecting human development stages. He stressed the impact of social factors on shaping a person's identity. According to this theory, each child process through developmental stages, seeking to establish a sense of regulation shaped by internal instincts, personal needs, and external influences. Daily interactions, such as play and family dynamics, are pivotal in this process. Lack of opportunities for self-initiative might lead to self-doubt and negatively affect self-esteem (Batra, 2013). Erikson highlighted the importance of play in this process, especially the first three crises of lifespan development (Sacco, 2013).

**Trust versus Mistrust (Birth – 1):** At this stage, children begin to understand the world and themselves through fundamental trust, which leads to hope as a vital virtue. A loving, secure and happy environment fosters trust and hope, a feeling of life worthwhile. The role of mothers and caregivers is critical since their happiness and contentment affect the children's sense of confidence (Batra, 2013). Play at this stage is physical and sensory. Children play to discover their bodies and environments (Sacco, 2013)

**Autonomy versus Shame and Doubt (1 – 3):** According to Erikson, parents and family also play crucial roles at this stage. Encouraging autonomy within clear boundaries helps children to develop independence and confidence, fostering a sense of "I am, I can, and therefore I will." On the other hand, excessive restriction leads to self-doubt and confusion. Allowing choices and exploration fosters learning and self-esteem (Batra, 2013). This stage also began the object play, where children started to learn the impact of self on the environment. They engage in activities like building blocks and drawing, which help them assert their autonomy and develop motor skills (Sacco, 2013)

**Initiative versus guilt (3 – 6):** Also known as play age, children develop initiative through play and social interaction, fostering a sense of purpose. Both family and school

play pivotal roles in this developmental stage. Parents should create a safe environment, while schools must provide effective curricula that encourage exploration and conformity, positively affecting emotional growth and nurturing confidence and initiative in children (Batra, 2013). Play at this stage evolves into social play. The experience children gain from pretend/imaginative play and role play aids them in understanding people's feelings and perspectives (Sacco, 2013).

While Erikson's psychosocial development theory extends across the lifespan, it notably gives less emphasis on the concept of play after the initial stages. Instead, his later stages of broader psychosocial challenges and identity formation illustrate human development's evolving nature beyond early childhood.

Jean Piaget is considered one of the most critical cognitive theorists of the 20$^{th}$ century (Carey et al., 2015). Piaget was the first person to emphasize the importance of children's active participation in their development, noting that problem-solving skills cannot be taught but can be learned through experience (Pakpahan & Saragih, 2022). He indicated his ideas about how children learn and adapt to their physical and social environment. According to Piaget, two key mechanisms exist for adaptation to new knowledge. First, assimilation is integrating new information into existing schema which means the structure of knowledge. Accommodation occurs when it is not possible to integrate new knowledge into existing schemas. To incorporate new knowledge, it is necessary to alter the existing scheme or create a new one.

Piaget indicates that children move through four stages of cognitive development, each of them characterized by different ways of thinking and understanding to world.

**Sensorimotor Stage (birth – 2):** At this stage, children's thinking encompasses sensory and motor activities, such as moving, touching and tasting. During the initial weeks, the infant's behaviours primarily consist of reflexive actions such as grasping and sucking. Subsequently, these reflexive responses evolve into conscious behaviours. The key characteristic of this stage is object permanence which is the ability to know that an object still exists even if it is hidden from view (Pakpahan & Saragih, 2022). Although Piaget claims children's object permanence emerges at around 8 months, research conducted by Renee Baillargeon and colleagues indicates infants as young as 2.5 months

old have rich object representations and understand object permanence (Carey et al., 2015).

**Pre-operational Stage (2 – 7):** According to Piaget, children cannot perform mental operations, and their thinking is based on what they see rather than logical principles. Piaget also indicates key features and achievements of this stage include semantic function, egocentrism, decentring, animism, seriation, and conservation (Pakpahan & Saragih, 2022). At this stage, symbolic play occurs since children begin to think using symbols and signs (semantic function), where they utilize an object to represent another. Moreover, children often attribute life-like qualities and actions to inanimate objects (animism) and consequently, children tend to perform pretend or imaginative play as part of their lives (Howard & McInnes, 2013; Pakpahan & Saragih, 2022).

**Concrete Operational Stage (7 – 11):** At this stage, children focus on establishing stability in their cognitive process. They acquire skills in basic arithmetic operations, such as addition, subtraction, multiplication, and division. Moreover, they can categorise tangible objects. Overall, they enhance their capacity for logical reasoning, even though their thoughts remain primarily based on physical, tangible objects. Play becomes more complex and rule-based at this stage (Pakpahan & Saragih, 2022).

**Formal Operational Stage (11+ years):** Piaget indicates that in the formal education stage, children gain propositional logic, hypothesis-testing abilities, and reasoning about possibilities and correlations. Piaget claims that these skills represent a significant advancement. However, research has demonstrated that many adolescents and adults do not consistently have those skills. It is suggested that these abilities are not as universal and naturally developing as Piaget proposed (Genovese, 2003).

Piaget's development theory has been criticised for the lack of empirical evidence, and the absence of considering cultural and contextual factors (Barrouillet, 2015; Carey et al., 2015; Genovese, 2003).

Another critical theorist, Lev Vygotsky highlights the interplay between biologically determined development and cultural effects. He proposed higher mental functions develop through social interaction and cultural mediation. He also developed a concept The Zone of Proximal Development (ZPD), claiming children can perform a range of tasks with the help and guidance of others that they cannot accomplish themselves. The

activities children can do without guidance represent their actual development levels, while the activities children can achieve with the help of others represent potential development levels (Bodrova & Leong, 2015, 2017; Veresov & Barrs, 2016).

According to Vygotsky, play is one of the most important characteristics to foster children's development. He suggests that play is characterised by creating an imaginary scenario, assuming roles and adhering to the rules associated with these roles (Bodrova et al., 2013). He also indicates that through play, children learn how to control their behaviours and feelings, improve higher cognitive functions, and encounter social situations and rules. Consequently, play aids children in embracing multiple perspectives, collaboration, cognitive decentring, abstract thinking and self-regulation (Bodrova et al., 2013; Bodrova & Leong, 2015, 2017; Veresov & Barrs, 2016). Moreover, empirical studies conducted by Vygotsky's student Elkonin support the idea that play creates a ZPD, and during play, children demonstrate improvements in self-regulation and abstract thinking (Bodrova & Leong, 2015; Veresov & Barrs, 2016). On the other hand, Vygotsky's play theory is criticised for its lack of scientific rigour, as it focuses primarily on rule-based play and excludes preschool children. Moreover, it is suggested that his ideas are culturally limited and outdated since contemporary research demonstrates the critical importance of symbolic and imaginative play in young children (Lambert, 2000).

Jerome Bruner is another theorist in cognitive development theorist who combined and integrated the theories of Piaget and Vygotsky. He suggests that children learn through their experience and they can absorb any information at any stage of cognitive development (Saracho, 2023). Bruner argues that learning and creativity involve more than just receiving information, they also require active effort from children to understand and interpret unexpected and unusual information (Fioretti & Smorti, 2019). Over time, his ideas evolved. He emphasized that learning is not merely about gaining knowledge; it also involves the significant role of culture in shaping how children construct knowledge (Takaya, 2008).

### 2.2.5. Playfulness

The terms play and playfulness were distinguished from each other for the first time by John Dewey in his book *How We Think.* He argued that playfulness is an attitude of mind characterized by freedom and creativity. He exemplified it by their imaginative reinterpretations of everyday items. A child playing groom as if it were a horse which is enabled by playfulness (1933). Moreover, some therapeutic play theories point out the critical role of playful therapy indicating the role of the therapist to provide playful space for the patient to cure themselves (Russ, 2004). The common point of these two theories is that the concept of playfulness is an attitude or disposition, and a way of thinking related to the mindset of the child, whereas play itself is suggested to be an act or performance.

Recently, various disciplines, such as psychology, occupational therapy, and game studies, have discussed the term playfulness. Masek and Stenros (2021) investigated a systematic literature review of the term playfulness from various disciplines to conceptualise and clarify playfulness. They concluded playfulness can be understood as prioritising engagement over external consequences, reality and conventions. They suggested that this perspective fills the gap between various disciplines by indicating that playfulness focuses more on the structure of engagement rather than its nature or purpose. Masek (2024) investigated a study on people from different cultures regarding the definition of playfulness and identified four characteristics of playfulness from an adult's perspective:

**Active Behaviours:** Playfulness involves active participation rather than passive observation.

**Emotional Reinforcement:** Playfulness includes experiencing emotions, such as joy and fun, as well as challenging and sad feelings.

**Social Sharing:** Playfulness is also about sharing experiences with others.

**Non-Serious Framing:** Playfulness encompasses activities that provide a more relaxed and engaging approach, in contrast to seriousness.

The recent study also indicates the importance of children's and practitioners' perspectives on playfulness to provide an environment for children to play freely and benefit developmentally (Hurme et al., 2023). Research from children's perspective of

playfulness indicates that children's self-reports offer valuable insight into their play behaviours. It is suggested that children view playfulness as engaging spontaneously where they feel humour and joy and physical activities that reflect their intrinsic motivation in play. Moreover, their perspective of play involves social interactions and peer engagement (Duss et al., 2023; Fink et al., 2020).

### 2.2.6. Play Types

The previous phase discussed the definition of play from different areas and perspectives. Biological, educational, recreational and therapeutic aspects of play are discussed by different scholars. Although they give different values of play, play is beneficial for all children of different ages and supports their development, health and learning (Cohen, 2019; Cowie, 2019; Howard & McInnes, 2013). However, there is still a debate about investigating, measuring and interpreting play. Some scholars such as Piaget (1951) and Hutt (1979) define children's play by categorising them into different types of play. Play studies that use categorisation to understand children's play remain. One of the most common and generalised categories are sensory-motor play, symbolic play, constructive play, and games with rules (e.g. Bigelow et al., 2004; Dyment & O'Connell, 2013; Edwards & Cutter-Mackenzie, 2013; Storli & Sandseter, 2019). Smith, Cowie and Blades (2015) categorised and explained children's play in detail as follows:
**Physical play** also known as sensory-motor play or functional play occurs in the very early years. Toddlers demonstrate it through movements such as kicking their legs and waving their arms which represents the preoccurs of play. As they grow, these activities evolve into jumping, climbing, running, and chasing activities (also see Cohen, 2019).
**Rough-and-tumble play** which can be considered a type of physical play appears among peers around the age of three. It involves activities such as wrestling, pushing, grappling and kicking. Although these activities might seem aggressive, children often smile and laugh as they can distinguish between play fighting and a real fight. Children's smiling and laughing may signal that these activities are playful.
**Play with objects** consists of different types of play and playful activities. Infants use objects to explore them by touching and sucking. These behaviours become "circular reactions" and are repeated by infants since they find them enjoyable. Repetition and

enjoyment are key characteristics of these behaviours since they represent playfulness. As infants grow, their repeated behaviours become more flexible and variable, including actions like banging objects together in different ways and laughing. This process, which Piaget called practice play, can be described as playful (P. K. Smith et al., 2015, p. 241). Around 2 years old, toddlers engage in constructive activities, such as stacking and sorting blocks, and doing simple puzzles. While this type of activity is done alone, it sets the stage for future social play that requires shared attention with others. Encountering playful activities with objects fosters pretend play and aids them in developing creativity (Cohen, 2019).

**Fantasy and sociodramatic play** are also known as pretend, imaginative, or symbolic. All these terms describe types of play where children and toddlers use their imagination to create scenarios, roles and narratives. Fantasy play occurs for children ages 12-15 months (Cowie, 2019). In the beginning, fantasy play mostly depends on realistic objects. However, around the age of two, children create mini-scenarios and manipulate objects. As for preschool children – aged between 3 and 6 – scenarios become more complicated with the involvement of peers (Cowie, 2019; P. K. Smith et al., 2015). The study investigates how children of different ages perform pretend play indicating that 3- and 4-year-old children use objects to perform their pretend play (approximately 83%). In contrast, older children use their body parts as objects to perform pretend actions (Overton & Jackson, 1973). Moreover, naturalistic studies by observing children's pretend play in home and school environments claim that children's pretend play is mostly social, incorporating their mothers at home and their peers at school. Additionally, it is reported that social pretend play lasts longer than solo pretend play (P. K. Smith et al., 2015). It can be concluded that children enjoy social pretend play more and language is a key characteristic of pretend play.

Moreover, some children – specifically at the age of 3 to 4 – have imaginary companions (IC). These ICs are generally a person or a pet in some situations. They provide entertainment and serve as a means for children to express their feelings and imaginations. Furthermore, it helps children to overcome undesirable emotions and conditions, such as loneliness and fear. It is also suggested that ICs can aid children in developing social and emotional skills (Armah & Landers-Potts, 2021).

**Digital play** involves children engaging with digital technologies. Although there is a debate about whether digital engagement represents a new form of play or hinders children's participation in physical play, it offers new opportunities for children and young people (Cohen, 2019), both educational and recreational (Plowman et al., 2010). These established distinctions in how play is understood and categorised provide an important framework for exploring how digital play is interpreted and valued in early childhood contexts. The next phase will provide a more detailed examination of digital play.

### 2.3. Play in Modern Society

The previous phase explored the history and definition of play as well as the foundational play theories and child development theories, which explore how play aids children in their learning and development with different play types. Building on these theories and foundations, this phase will discuss how play has evolved into a digital context. It provides insight into children's engagement with digital devices, demonstrating statistical data about current trends in digital engagement among children. Furthermore, it explores the educational, recreational and therapeutic value of play in the digital context. Finally, it explores the digital play theories and frameworks to understand specific play behaviours and interactions in digital environments. This section discusses how digital play, rather than being treated as a singular dimension of activity, may be conceptualised as educational, recreational, and therapeutic.

#### 2.3.1. Statistics and Current Trends in Digital Engagement

Technological devices and media have become integral parts of our daily lives with the rapid development and widespread adaptation of technology in recent years (Cowie, 2019). Children interact with various types of technological devices, such as computers (e.g. Ramos-Vega et al., 2021; Shin et al., 2021), touchscreen devices (Disney et al., 2019; Harrison & McTavish, 2018), digital cameras (e.g. Stephen & Plowman, 2014), game consoles (e.g. Hollett & Ehret, 2015) and televisions (e.g. Bassul et al., 2021). Children spend plenty of time using these digital devices for various activities such as watching videos or television (Bassul et al., 2021), playing educational games (Winters

& Vratulis, 2013; Xu et al., 2012) and recreational games (Marsh, 2014; Verenikina et al., 2010), reading e-books (Roskos et al., 2012) and participating video call (McClure et al., 2018).

Statistics also demonstrate that children interact with various technological devices and engage in multiple activities. Data collected in 19 European countries in 2020 indicates that smartphones are the most frequently used devices by children, with 65% to 89% of children aged 9 to 16 using them. This is followed by computers, including desktops and laptops, used daily by 26% to 66% of children. Tablets are used by 14% to 43% of children, game consoles by 5% to 34% and smart TVs by 17% to 75% (Smahel et al., 2020).

The most popular activities among children are watching videos and listening to music, communicating with friends and family members, visiting social networking sites, and playing games, respectively. Moreover, a comparison of survey statistics with those from a previous survey conducted in 2010 reveals three key characteristics. First, there has been a substantial increase in both smartphone usage and the amount of internet use. Secondly, the nature of children's online activities has shifted towards more multimedia consumption, such as watching YouTube and communicating. Lastly, the landscape of digital devices has changed, with smartphones becoming the dominant devices for accessing the internet (Smahel et al., 2020).

Another comprehensive study provided by Ofcom about children's media habits aged 3 to 17 across the UK conducted with 2480 parents and over 5000 children demonstrated a significant shift towards mobile device usage, with 71% of children accessing online content through smartphones and tablets. While children aged 3 to 11 are more inclined to use smartphones, older children, aged 12 to 17, predominantly use smartphones (Ofcom, 2023).

According to Ofcom (2024), children's activities vary depending on children's age. Similar to research conducted by Shamel et al. (2020), watching videos is the most popular activity among children in the UK, with platforms such as YouTube which is nearly popular among all age groups. Engaging in social media starts to rise significantly from the age of 8, with over half of children aged 8 to 11 and more than 90% of those aged 12 to 17 using social media platforms. TikTok, Instagram, and Snapchat are the

most preferred social media platforms, especially among older children who participate both passively and actively in posting and sharing content (Ofcom, 2024a).

Playing video games is another popular activity, with more than half of children aged 3 to 17. Younger children play educational and creative games on tablets, whereas older children tend to engage in multiplayer and competitive games on game consoles and PCs. Parents reported concern about their children's online communication through gaming platforms with strangers through online games. Despite the broad recognition of the educational benefits of online engagement, parents are concerned about exposure to inappropriate content, online bullying, and excessive screen time, which will be discussed in further detail.

According to their data, there has been a shift from 2005 to 2023 in children's digital habits. First, there has been a substantial increase in screen time, with children aged 8 to 12 spending more than 3 hours engaging with technological devices. Moreover, the digital devices children encounter has changed from 2005 to 2023. While TVs are the most popular devices among children, with 8- to 15-year-olds averaging 14 hours weekly, in 2023, the time spent on TV dramatically decreased and shifted to mobile devices, such as tablets and smartphones. Although video watching remains a dominant activity, there has been significant engagement in social media and video games. Moreover, social media platforms, such as TikTok and Instagram, have become popular among children in their media consumption. Furthermore, parental concern has increased due to the emergence of new potential risks, such as exposure to inappropriate content and online bullying, which will be discussed in further detail.

Recent statistics gathered from 19 European countries (Smahel et al., 2020), as well as those specifically collected in the United Kingdom (Ofcom, 2024b), indicate a significant increase in children's screen time. Both sets of data highlight the dominance of touchscreen devices, such as smartphones, tablets, and iPads, in children's daily lives. Although these statistics provide information on the amount of time children spend on different devices, some scholars have argued that the concept of *screen time* offers an overly simplistic explanation of children's interactions with digital technologies and might be misleading while interpreting children's digital experiences (e.g. Barr et al., 2020; Hiniker et al., 2019). Hiniker et al. (2019) and Barr et al. (2020) suggest that

focusing on the amount of time children spend with digital devices fails to capture the contextual complexity of children's digital experiences, including social and cultural factors. Moreover, they suggest that policy guidelines built around timely limits risk fostering confusion and guilt among parents rather than meaningful support. This aligns with the study by Blum-Ross and Livingstone (2018), who observe that many parents consider time-based guidance – such as APP's two-hour guidance – as moral measurements of good parenting, even though children's engagement with digital technology consists of multiple purposes beyond screen time, including fostering learning, creativity and communication.

These studies suggest that children's screen time does not deeply explain children's digital play. They claim that studies focusing on children's screen time do not adequately cover digital play in various contexts, the purpose of digital engagement, and children's interactions with adults and their peers. They call for more qualitative studies that can investigate children's digital experiences in different contexts, with varied content and relational dynamics.

Building on these critiques, recent scholarship has moved beyond the notion of *screen time* to explore how children's digital and non-digital experiences intertwine in everyday life. Therefore, the next section examines post-digital perspectives that challenge binary distinctions such as digital versus real or play versus learning and discusses how technologies are embedded within children's daily life experiences and meaning-making processes. This shift emphasises the need to move beyond time-based measures and consider how digital play might be framed and valued across contexts, specifically in terms of its educational, recreational and therapeutic functions.

### 2.3.2. Post-Digital Perspective in Children's Play

In childhood studies, traditional approaches focus on comparing digital versus real and play versus learning. However, post-digital approaches challenge these comparisons and discuss how digital technologies are embedded in real life. They emphasise that digital technologies are not separate from real life, but rather an integral part of it. Mackey (2003) suggests that children's literacy learning occurs in a multimodal context. Instead of studies that compare reading printed paper and digital media, Mackey (2003)

highlights the value of multimodal learning. Given *Sesame Street* as an example, she pointed out how printed literacy and commercial intertextuality have become integral to children's meaning-making processes. Although *Sesame Street* was an educational TV show first, numerous books, games, videos, and websites have been established in relation to it (Mackey, 2003). This demonstrates that children's experiences cannot be divided into real versus virtual or watching versus reading. Rather, they constantly move between the virtual and the real, and between reading, watching, and playing. While this study exemplifies a post-digital view of children's digital literacy, it does not demonstrate how such literacies are applied in practice.

The study conducted by Thiel (2015) directly observed children's meaning-making process while they participated in a costume-making activity. According to their research, literacy is distributed between children, objects and spaces. Materials are not just supportive, but rather they shape narratives, claiming that the boundaries between humans and materials blur in literacy practices (Thiel, 2015). Although this study does not demonstrate that virtual and real cannot be divided, it contributes to post-digital perspectives that challenge binary framings.

Supporting the idea that technology is not separated from daily life, Knox (2019) discusses the post-digital perspective in different dimensions. First, Knox (2019) claims that integration of digital technology into education cannot be considered in isolation from economic interests. There are companies whose aim is to benefit from the data by buying and selling the data of students, children and courses. Knox (2019) also states that these datasets are also used by governments to measure, control and even compare schools. Moreover, it is also suggested that digital technology is entangled with the material, human, and environmental costs of technology production. What we call *digital citizenship* today should be informed by the costs of using technology in education (Knox, 2019).

Wohlwend (2019) discusses the value of a post-digital perspective in children's digital play. She argues that children's digital play is not purely digital or virtual; it occurs in transmedia in which media characters and narratives are not just in the digital world but also in their physical surroundings To illustrate, "Frozen" is not just an animation that children watch for entertainment, but a cultural phenomenon that shapes their ideas

about friendship, gender roles, and emotional expression. This shows that children are surrounded by global media networks and marketing strategies that influence their everyday play and imagination (Wohlwend, 2019). Moreover, according to their key study, *The Monster High* app is designed to encourage both playing and paying. Although the game is free to play, in-game buying options are available, providing advantages for players who have purchased the game. This also demonstrates economic factors which has an impact on children's digital play (Wohlwend, 2019).

Adopting a post-digital perspective, Pettersen and Edert (2024) investigate two 6-year-old children's play in digital and physical environments to understand how these engagements affect their friendships and emotional development. They recorded children playing the video game called *Minecraft* after watching a video related to the game and then re-enacted scenes with Minecraft toys and played with Minecraft Lego figures. According to their data, children exhibited excitement, surprise, and joy in both their digital and non-digital play (Pettersen & Ehret, 2024). This shows that children's digital and physical experiences are connected to each other. Different types of plays merge into one post-digital assemblage where digital and material worlds are inseparable (Pettersen & Ehret, 2024). As a post-digital perspective indicates, rather than focusing on types of plays, which cannot be completely separated from each other, the study highlights how children feel while playing, demonstrating that children's play and learning are shaped through feelings and the ways their play materials (digital and non-digital) connect and interact.

Another study by Pettersen et al.(2025), which adopts a post-digital perspective, investigates children's play in Norwegian preschools. Their study found that even in the situation of the absence of technological devices, the logic and imaginaries of digital culture still shape children's play in preschool. They observed children recreating scenes from Minecraft, a video game, with Lego blocks (Pettersen et al., 2025). They identify sociometrical patterns of *joining*, *building*, and *not running out of things*, demonstrating that children's play unfolds through children's ongoing engagements with materials and digital imaginaries.

To sum up, this section discussed that the post-digital perspective challenges the binary perspectives that distinguish digital and real. It suggests that children's experiences with

digital devices are intertwined with their physical experiences, in which they affect each other. The next section will focus on the touchscreen devices and the way children engage with them.

### 2.3.3. The Feature of Touchscreen Devices

Touch-screen devices differ from other devices in terms of their usage. It enables its user to engage with the digital interface by touching their fingers to manipulate to content. In contrast to computer usage, children do not need to use the mouse and master the alphabet on the keyboard. There is a home button on the screen that enables children to exit an application very easily and quickly (Petersen, 2015). Furthermore, it is suggested that the shape and size of the tablets and iPads allow the screen accessible to more than one user at the same time. To illustrate, children can gather around an iPad if it is placed somewhere such as a table, or floor. Moreover, it enables children to play on the same screen (Petersen, 2015).

One of the most essential advantages of touch-screen devices is their portability. It is light and easy to carry on the bags even for young children. 'While desktop computers and console-based play are restricted within the home-specific locations…' (Mavoa et al., 2018, p. 3296), touchscreen-based play may occur anywhere. It provides an opportunity for children to carry it. To illustrate, research suggests that libraries have started to become places where children meet up after school to play games together with their tablets, or to use it for educational purposes (Mavoa et al., 2018). It can also be seen that the usage of tablets becomes more and more common in educational settings not only because of their portability but also applications with their educational and learning outcomes (e.g. Oliemat et al., 2018).

#### 2.3.3.1. The Engagement with Touchscreen Devices: How do children use them?

Children's engagement with touch-screen devices may occur in different places. However, most of the research on children's engagement with technology focuses on engagement in a home setting (e.g. Dunn et al., 2018; Harrison & McTavish, 2018; Verenikina & Kervin, 2011) or an educational setting (e.g. Leung et al., 2020; Marklund

& Dunkels, 2016; Roskos et al., 2014). However, children's engagement may also occur in different places such as outdoors (e.g. Eckhoff, 2017).

A study conducted by Oliemat et al. (2018) in Jordan with six-year-old children claims that playing games is the most popular purpose of using a touchscreen device. More than half of children indicate that they use tablets to watch cartoons and movies on YouTube in their research. Nearly three-quarters of children imply that they do their homework on their tablets, or they use Google or different search engines to do research. Ten children indicate that they use tablets for religious purposes which is to learn and memorize the Quran (Oliemat et al., 2018).

It is suggested the applications of tablets make children's learning fun (Dunn et al., 2018). To understand the features of applications, Neumann (2014) categorises and defines the apps that children engage with. They categorise the application into six groups:

**Gaming apps:** Entertaining activities contain action and challenges. **Apps:** Angry Birds, Fruit Ninja, Temple Run

**Literacy apps:** Apps that support children's literacy learning. That consists of activities like writing, letter tracing, spelling etc. **Apps:** Scouts ABC, Pocket Phonics, Little Speller

**Creating apps:** Activities enable drawing, painting, building, designing, puzzles, music production etc. **Apps:** Art Maker, Wood Puzzles, Lego 4

**Mathematic apps:** Activities include identifying numbers, counting, time, shape etc. **Apps:** Math Toddler, Bugs and Numbers, Math 3-5

**E-book apps:** Interactive multimedia story books with or without an in-built narrator **Apps:** Lu Lu in Australia, Cat in the Hat, Toy Story Reader

**Other Educational apps:** Activities that involve general learning activities, knowledge about the world, language skills etc. **Apps:** German Flash Cards, Ocean World, Hello Zoo

According to their data, 75% of children prefer game apps when they interact with touchscreen devices, followed by literacy apps with 55%. Nearly half of children engage with creating apps, whereas only 37% of them prefer math apps. Moreover, nearly a fifth

of them engage with e-books and other educational apps, with 27% and 24% respectively.

This categorisation is useful to understand the type of application children encounter. On the other hand, some applications can be categorised into more than one of these groups. To illustrate, Minecraft can be categorised as a gaming app, a creating app, and an educational app at the same time because of its features and mechanics (see Baek & Touati, 2017; Nguyen, 2016). Moreover, some applications foster physical activities that take place in the real world, not only on the screen (Lieberman et al., 2009) which cannot be found in this categorisation. Moreover, gaming apps differ from each other in terms of the way of play. Although its limitations this categorisation is useful to understand the type of engagement children encounter. However, just previously discussed play theories are categorised into 3 main categories: educational, recreational, and therapeutic. The next section will focus on the value of play in the digital context in these 3 categories: educational, recreational and therapeutic.

### 2.3.4. Educational Play in Digital Context

As previously discussed, the characteristics of play are spontaneity, enjoyment and freedom. Play is an activity children explore and create, supporting their learning and creativity. Digital play is a new concept in early childhood education that offers children new opportunities to explore and create in digital environments. Digital technologies recently integrated into preschools to provide new play and learning opportunities for children in early childhood (e.g. Cattoni et al., 2024; Chu et al., 2024; Habiba et al., 2024; Huang et al., 2024). Like traditional play, digital play also enables children to improve cognitive, social and emotional skills in structured or unstructured educational environments (Chu et al., 2024).

One of the educational benefits of digital play is that it improves children’s literacy and numeracy skills with interactive learning experiences while playing virtual games. The study conducted on 113 children by Cattoni et al. (2024) compared the traditional and gamification methods in improving children's literacy and numeracy skills. The results indicate that children who engage in gamified digital applications demonstrated greater enthusiasm and enjoyment compared to those who used traditional pen-and-paper. It is

suggested that in gamified digital applications, children are observed to enjoy autonomy over their choices in-game while receiving immediate feedback that improves their competence sense and supports intrinsic motivation (Cattoni et al., 2024). Another study by Disney et al. (2019) investigated the effect of digital play in improving children's numeracy learning. The study suggests that digital technology, specifically using gestural devices like tablets, enables children to interact with numeracy concepts with their peers, resulting in enhanced counting, number recognition, and arithmetic skills. Digital storytelling apps are also claimed to foster play-based learning that encourages children to express themselves in a creative way. To illustrate, Fantozzi, Johnson, and Scherfen (2018) investigated how a single iPad may foster playful experiences in children aged 3 to 5 years old in the preschool setting. The project included 3 applications with different purposes. First, children used the *Shadow Puppet* app to take photos and record voiceovers, creating digital storybooks. *Toontastic* app allows them to animate storytelling, in which children collaboratively work to build character and enact scenes, putting the voice behind the scenes. And *SeeSaw* app provided a platform for children to share their stories with their families (Fantozzi et al., 2018). Although there were some challenges and limitations, such as the sharing devices problem, *Toontastic*, and *Shadow Puppet* were useful apps to foster children's creativity, agency, and social skills. Moreover, *SeeSaw* was a good example of providing a connection between home and school.

Moreover, studies by Hatzigianni et al. (2018) and Samuelsson et al. (2024) applied the Digital Play Framework to observe children's digital play with tablets. Both studies documented instances of epistemic and ludic play in Greek (Hatzigianni et al., 2018) and Swedish (Samuelsson et al., 2024) preschools. Children were observed exploring tablet functions, starting from simple actions such as swiping to more advanced features like adjusting camera settings, which helped improve their digital skills. Some children progressed to ludic play, using tablets creatively in activities like recording puppet shows and creating innovative content (Hatzigianni et al., 2018; Leung et al., 2020). However, children's creativity appears to be restricted by the limitations of apps. Most children seem to remain in epistemic play, as their creativity is bound by the tablet's structure (Samuelsson et al., 2024).

Sulaymani et al. (2018) investigated children's iPad use in Saudi classrooms from their perspectives. When iPads were introduced to children, they perceived them as entertainment tools rather than learning tools. Children initially encountered iPads as they engage in toys, focusing on the recreational perspective of play instead of digital. However, with guidance from practitioners, integrating competitive elements and collaborative tasks may alter the children's motives, fostering educational aspects of play. Practitioners should design digital activities carefully to aid children in moving between play and learning to nurture them into a learning-oriented perspective within the digital play environment (Sulaymani et al., 2018).

On the other hand, practitioners' perspectives on digital play varies. While some practitioners feel comfortable integrating digital technology into play practices, others reported a lack of technical knowledge (Chu et al., 2024; Leif Marklund, 2020). Moreover, practitioners reported concerns about managing children's focus on educational content and isolated play experiences, limiting social interaction with peers (Ditzler et al., 2016; Leif Marklund, 2020; Samuelsson et al., 2024). Moreover, practitioners expressed concerns about the negative physical and cognitive effects of prolonged digital engagement and potential addiction and health issues (Chu et al., 2024; Sakr & Oscar, 2022), which will be discussed further. These studies illustrate the educational value of digital play and its potential learning and development outcomes. However, digital play cannot simply be understood by just examining children's experience with digital devices. These studies illustrate that adults' perspectives and contextual factors have a tremendous impact on children's educational digital play activities. The recreational dimension of digital play will be discussed in the next section.

### 2.3.5. Recreational Play in Digital Context

As previously discussed, the recreational concept of play has been considered an essential part of children's lives, contributing to physical, social and cognitive development and learning. Traditional recreational play activities include physical play, imaginative play and social play. However, after digital tools have become available to

children, their recreational play activities have shifted to video games, social media applications and other digital apps in their daily lives.

Recreational use of digital technology by children is observed in the very early years. To illustrate, Yadav et al. (2018) investigated how children aged 6 to 24 months interact with YouTube videos on smartphones. Their study shows that even 6-month-olds are attracted to YouTube videos, specifically music videos. At the age of one, they are interested in watching videos rather than just listening to music. By 18 months, they actively interact with touchscreen devices by randomly touching the screen and pressing buttons. However, the data demonstrated that children under 2 preferred to choose physical toys if they were given the option. Moreover, their study suggests that although videos and music activities attract children under 2, these activities do not contribute to meaningful learning and development, specifically if parent involvement is absent (Yadav et al., 2018).

Children above 2 years old are observed to interact meaningfully with these devices. Kabali et al. (2015) found that by the age of four spend plenty of time with digital devices for entertainment. Another study by Rajic and Tasevska (2019) reported that nearly all of the children in their study reported playing video games, most of them motivated to amuse themselves. The study by Yadav and Chakraborty (2018) observed that 2- and 3-year-old children engaging in recreational gaming apps like *Baby's Fish,* which they catch on the screen, were popular among them. These findings appear to align with Piaget's view that children under two rely on sensory-motor experiences and that symbolic play emerges after this period. From a Vygotskian perspective, the absence of adult involvement may explain the limited developmental value of such digital content.

As previously discussed, theoretical perspectives of recreational play require social and physical interactions. On the one hand, interaction with digital devices, specifically single-player games or passive media consumption, such as watching videos, may isolate children, leading to asocial behaviours, which is one of the most significant features of play. Research shows that without parental active involvement, these interactions are mostly meaningless and do not contribute to learning and developmental outcomes (e.g. Yadav et al., 2018; Yadav & Chakraborty, 2022).

On the other hand, Marsh et al. (2018) indicated that children's engagement with digital devices at home fosters various types of play, promoting creativity and social interaction with family members. Children are observed playing constructive games, such as "Minecraft" and "LEGO," which support both creative and constructive engagement while allowing for fun (Caughey et al., 2024; Dezuanni et al., 2015; Marsh et al., 2018). Moreover, research demonstrated that children engage in various types of social interaction in both digital and real-life contexts, while they enjoy playing video games (e.g. Marsh, 2014; Saleme et al., 2020; Wu et al., 2020).

One of the most significant changes "digital play" brings is the shift from physical to sedentary activities. As previously highlighted, classical recreational play theories focus on energy expenditure (Graham & Burghardt, 2010). According to this theoretical perspective, digital play may not be considered as "play" in the traditional sense, since it often involves prolonged screen time that lacks the physical activities associated with play activities.

On the other hand, "exergaming" or exercise-based gameplay fills the gap in physical activity in the digital context of recreational play. Dos Santos et al. (2016) suggest that exercise-based video games improve children's physical activity while having fun. Current studies also claim that exergaming fosters physical activity in children and improves their motor skills.

To summarise, the concept of recreational play has evolved with exposure to digital technologies in children's daily lives. Digital play contributes to new opportunities, aiding children in terms of their physical, imaginative and social development. However, passive media consumption, social isolation and engagement before 2 years old do not contribute to any recreational play experience or support children in their learning and development. Consequently, parents play a critical role in children's digital experiences, which will be discussed further in detail. Taken together, these studies highlight that recreational digital play can be positioned as distinct from educational use. Recreational activities are likely to provide more autonomy for children in making their own choices. Such apps do not specifically aim to develop particular skills. However, they may still contribute to learning and developmental outcomes through enjoyment, creativity, and social interaction.

### 2.3.6. Therapeutic Play in Digital Context

As previously discussed in Phase 1, several play theories discuss the therapeutic value of play. It is suggested that play is a process or a tool where children express their feelings and experiences. Therapeutic play theories aim to understand and if necessary, heal the emotional conflicts or traumas (Russ, 2004). Since technology expands in therapeutic studies, research explores its potential value in therapeutic play practices. Integrating technology into these practices provides new opportunities for therapists, offering interactive platforms such as virtual reality (VR), augmented reality (AR), and video games. These platforms allow children to navigate their emotions and challenges in virtual worlds, helping them express their feelings and anxieties. While technology offers a valuable tool for therapeutic play, several challenges such as technical limitations and issues related to engagement might be observed.

To illustrate, the study by Sallot (2021) shows the emotional healing value of therapeutic play on adopted children with trauma. They suggest that the storytelling role-play game *Mythos* provides a virtual world where children interactively and safely explore challenging emotions. The game helps children improve skills related to emotional regulation, coping, and problem-solving skills as well as addressing psychological challenges that adopted children may struggle to overcome such as loss, grief, and identity. Moreover, its design allows therapists to guide children through the challenges of the game to create discussions on real-life emotions with children (Sallot, 2021). However, this study lacks experimental results.

On the other hand, experimental studies suggest that using technology in therapeutic play is valuable for children with various developmental challenges or disabilities, aiding them in specific development areas and treatment strategies. For instance, focusing on children aged 6 to 11, Hosseini and Foutohi-Ghazvini (2016) used a quasi-experimental to investigate how augmented reality influences the social skills of children with autism. The study was conducted by displaying 3D models and sounds of selected icons of animals to children to aid them in recognising and learning about the objects. Three different tests are used to assess the effectiveness of the AR system in developing children's ability to engage in the digital world, recognise objects and communication skills. It is suggested that children are attracted to the virtual world and show

improvement in recognising and interacting with objects (Hosseini & Foutohi-Ghazvini, 2016).

Another comprehensive study by Budiyarti et al. (2023) focused on children with Attention Deficit/Hyperactivity Disorder (ADHD) to compare the effect of traditional and digital play therapy on social, emotional and behavioural development. 126 children with ADHD aged 6 to 12 are randomly assigned to control and experimental group. The control group received traditional play therapy. The experimental group, on the other hand, is engaged in both traditional and web-based therapy. According to their data, the experiment group showed significant improvement in emotional, behavioural and social development compared to the control group (Budiyarti et al., 2023).

Speech therapy is another field that has benefited from integrating digital games into play therapy. A comprehensive study by Saeedi et al. (2022) indicates that digital games notably develop children's motivation and participation in speech therapy exercises. Moreover, it is suggested that the interactive nature of digital games helps maintain attention and provide longer periods of engagement during therapy sessions. Moreover, Furlong et al. (2018) emphasized that the advantages of digital play therapy go beyond longer attention and enjoyment, it also gives an opportunity for children to practice speech therapy tasks at home, extending beyond clinical settings which improves therapeutic outcomes. Zajc et al. (2018) specifically highlighted the advantages of tablet application for young children which include popular culture element that keeps them interested and motivated to therapy.

On the other hand, several challenges and difficulties are addressed in the literature regarding integrating technology in play therapy. For instance, Pykhtina et al. (2012) reported that some therapists expressed concerns about digital play therapy, citing a lack of engagement with children during gameplay since these games sometimes promote more self-engagement and isolation. Moreover, technical issues are reported, including challenges in finding high-quality games for therapeutic play. Furlong et al. (2018) claim that app stores have no Boolean operators to find targeted applications which hinders refining searches effectively. Moreover, app listings are frequently affected by popularity raking which overshadows less targeted apps. As a result, many apps related to therapy are diminished due to insufficient user reviews (Furlong et al., 2018). Some

apps may not fully meet the therapeutic needs of children. Furthermore, the game mechanics can challenge children more than anticipated, potentially causing frustration if they fail to progress through levels or achieve game objectives. This frustration may lead to negative emotional and behavioural patterns, including low self-esteem (Saeedi et al., 2022). Moreover, digital play therapy requires technology availability and internet access, which may not be available for all families. Additionally, parental beliefs may limit the time children engage with the games (Loudoun et al., 2023) which will be discussed further in Phase 4. Collectively, existing studies suggest that the therapeutic value of digital play arises not from the technology itself, but from how digital play is shaped and mediated to support children's emotional well-being and regulation across contexts.

This section discussed the value of play in digital content dividing it into 3 different perspectives of play that are educational, recreational and therapeutic.

Overall, these perspectives suggest that digital play is not inherently educational, recreational and therapeutic. However, it becomes contextualised and meaningful through the ways it is interpreted, structured, and mediated within specific contexts and environments such as home and school. The next section will delve into digital play theories that explain types of play occurring in digital content.

### 2.3.7. Digital Play Theories

In today's world, the nature of children's play has evolved, presenting both new opportunities and challenges for practitioners, parents and researchers. The definition of traditional play, which is already complex, has become increasingly complicated with the integration of digital technologies (Stephen and Plowman, 2014). The term 'digital play' has been used by many scholars. However, there is no clear definition of what digital play is. Although previous research has categorised digital play in various ways; however, there is no consensus on its definition (Fleer, 2016). They identified four characteristics of digital play through cultural-historical analysis:

**Imaginary Digital Situations:** Children demonstrate roleplay interactions stimulated by digital devices and applications such as responding to game characters as if they were real.

**Digital Talk in Imaginary Digital Situations:** Children use digital communicative language during play including animated dialogues with game characters and social interaction with peers during gameplay.

**Giving New Meaning to Digital Objects and Actions:** Children modify icons and symbols to create imaginary scenarios and give new meaning to a digital context. To illustrate, they use emoticons to express emotions in a digital world.

**Porous Boundaries Between Digital and Social Pretend Play:** Digital play often merges with social pretend play, creating transitions between virtual and traditional play.

While this theory is useful to understand the term digital play, it does not provide information about the play types. To understand children's learning in a digital world and to help educators observe and assess children, Bird and Edwards (2015) created a 'Digital Play Framework'. They adopted Vygotsky's (1997) theory on the cultural basis of knowledge. Embracing Vygotsky's theory and considering digital cameras as a 'tool', they adopt Hutt's (1996) play taxonomy to organise activities that occur while children use digital cameras (Bird & Edwards, 2015). According to Hutt (1996), when children engage in an object two types of play occur: epistemic and ludic play. Epidemic play is when children play with an object in an 'exploratory' way and try to understand what the object does. In other words, at this stage, the function and purpose of an object are discovered. Ludic play, on the other hand, occurs when children innovatively use the artefact to achieve their goals with it. Although children can go back and forth between these two types of play, children must master epistemic play to achieve ludic play (Bird and Edwards, 2015; 2017). From their observations, they indicate children perform both epistemic and ludic play with cameras. First, children engaged in exploratory activities, such as pressing camera buttons, and location functions to understand the operations of the tool. It is suggested that children's actions include epistemic play behaviours including random actions, seeking assistance and problem-solving to achieve desired outcomes. After they became familiar with the basic functions of cameras, children moved to use these devices to engage in symbolic and imaginative play. They performed ludic play activities such as deliberating the use of devices for pretend play, creating imaginary situations and photographing play activities. To illustrate, children created puppet shows acted out scenarios and recorded videos for specific purposes.

Other scholars later used this framework to understand children's digital play. First, Hatzigianni et al. (2018) adopted this framework in Greece to investigate children's engagement with tablets in kindergarten. They studied children's use of tablets during free playtime with educational applications downloaded by their teachers. Their observations indicated that both epistemic and ludic play were present. Moreover, tablets facilitated social scaffolding, with children helping each other and working together to navigate tablet functions or to create play scenarios. The study also suggests that children showed increased motivation, enthusiasm and creativity while using the tablets, (Hatzigianni et al., 2018) which are the key characteristics of playfulness. Furthermore, they noted that tablets make children's activities more reflective and complex and have the potential to aid them in physical, social and cognitive development (Hatzigianni et al., 2018).

Secondly, Leung (2020) used the Digital Play Framework for play and art activities for children aged 5 to 8. They structured a workshop that included video concepts, technical skills and narrative skills, incorporating storyboard drawing activities and video recording activities. They observed children performing epistemic play by demonstrating problem-solving and skill acquisition to learn the function of digital devices, and lucid play by integrating traditional art elements into digital media and creating innovative content (Leung et al., 2020).

Both research studies claim that the Digital Play Framework is useful for practitioners to understand and observe children's engagement with digital devices. They suggest further studies on the integration of digital devices into art and play activities in early childhood education to better understand their impact on children's learning and development (Hatzigianni et al., 2018; Leung et al., 2020).

Marsh et al. (2016) claims that resource availability for children's play has changed within the technological devices. They suggest that within children's engagement with technology, the 'nature of play' has changed not the 'type of play'. Therefore, instead of using a 'tool' to categorise children's play in the digital age, they decided to revise Hughes' (2002) play taxonomy to investigate how digital applications may foster play and creativity (Marsh et al., 2016). They redescribe Hughes' 16 types of play to adopt their research. To illustrate Hughes defines social play as play during which children

create and use rules for social interaction, while Marsh et al. (2016) social play in a digital context as a play where children create and follow rules for social interactions. After defining all types of play, they observed and recorded children, aged under 6, by a video camera while they were using the apps. From the data they collected by recording children's engagement with digital apps, they monitored plenty of play types. To illustrate, they observed that a 4-year-old child playing 'Minecraft' where he builds a virtual environment manipulates his avatar and creates structures, demonstrating control over the digital environment that they categorised as mastery play. Another 3-year-old child playing 'Temple Run' and experiencing tension and fear which they categorised as deep play. Another child playing an augmented reality app, imagining the iguana depicted in the app has run away from the screen which is imaginative play according to Hughes.

Although they found Hughes' taxonomy very helpful in understanding children's play in the digital context, they found a deficiency in the current taxonomy, which is called 'transgressive play' and defined as:

> *Play in which children contest, resist and/or transgress expected norms, rules and perceived restrictions in both digital and non-digital contexts* (Marsh et al., 2016, p. 250).

An example of transgressive play is that children play apps called 'Alphablocks' by manipulating alphabet blocks in ways that are not intended by the game design. Overall, Marsh et al. (2016) claim that digital play taxonomy offers a solid framework for analysing digital play among different age groups and highlights that digital play and non-digital play are not mutually exclusive. It asserts that digital play is a genuine form of play. This adaptable framework allows adjustments to keep pace with technological advancements and the evolving nature of play. This thorough analysis underscores how children's play is evolving in a digital context and offers a robust structure for future research and practical applications in educational settings. Taken together, these theoretical approaches show that play is a broad and multidimensional concept. Different frameworks emphasise the different aspects of digital play to investigate how children engage with these devices, such as play types or their functions. This study adopts educational, recreational and therapeutic aspects of digital play from the

perspective of practitioners and parents to contextualise and categorise the digital play to interpret children's digital experiences. The next section will focus on how these interactions affect children's learning development.

### 2.4. Developmental and Learning Outcomes of Children's Digital Engagement

The previous phase discussed the theoretical perspective of play in the digital context and how children engage with digital devices for recreational, educational, and therapeutic purposes. Moreover, it provided statistical information about current trends, focusing on the devices and activities preferred by children in different age groups. Finally, the phase explained the popularity of touchscreen devices among young children, highlighting the reasons behind their widespread use. In this phase, the effect of these interactions between children and digital devices will be explored. The developmental and learning outcomes of these engagements will be discussed in terms of physical development, social and emotional development language development, and cognitive development and thinking skills, respectively. Both pros and cons of digital play will be explored in detail.

#### 2.4.1. Physical Development

Although research indicates that excessive screen time negatively affects children's physical development because of staying standing for a long time (Robinson et al., 2017), studies show that using touchscreen devices aids children in improving fine motor skills (Bedford et al., 2016; Moon et al., 2019). Bedford et al. (2016) studied how toddlers' interaction with a touchscreen, such as scrolling the screen, devices are linked to fine and gross motor skills. They indicate that toddlers who actively use touchscreen devices (e.g., scrolling), rather than passively (e.g., watching videos) tend to improve their fine motor skills quicker than those who do not interact with touchscreen devices. However, there was not a significant relationship between touchscreen device use and gross motor skills (Bedford et al., 2016). Another study conducted by Souto et al. (2020) compared the fine motor skills of children aged 24-36 months who used tablets and those who did not, to understand if the use of touchscreen devices developed their fine motor skills. According to their measurement, there were significant fine motor skills

between tablet users and non-users, with tablet users scoring higher on fine motor tasks (Souto et al., 2020).

Another study investigated the same subject with older children, aged between three to five years old by Moon et al. (2019) claims that active use of touchscreen devices may support fine motor development in children at the age of three since it involves finger and hand movement. However, they suggest that children aged from 4 to 5 were not observed to improve their fine motor skills. Supporting this claim, research conducted by Mohamed et al. (2023) with children aged 4 to 5 found that those who frequently used touchscreen devices had significantly lower scores in grasping tasks compared to those who did not. Moreover, the study suggested that children who used touchscreen devices performed worse in visual-motor interaction tasks, such as building blocks, cutting with scissors and tracing lines (Mohamed et al., 2023). Another comprehensive study conducted by Lin et al. (2017) concluded that children who interact with digital devices 20 minutes per day for 24 weeks showed poorer fine motor precision and pinch strength compared to those who did not interact with touchscreen devices (L.Y. Lin et al., 2017).

On the other hand, excessive screen time and screen time before bedtime is suggested to cause sleep problems. To illustrate Chang et al. (2015) suggest that people who read from screens in the evening take nearly ten more minutes to fall asleep than those reading a printed book. Another study exploring the relationship between screen time and sleep indicates that approximately 75% of children have screen-based media devices in their bedrooms. It claims that excessive screen time results in delayed bedtime and reduced sleep duration (LeBourgeois et al., 2017). Interestingly, Axelsson et al. (2022) found no association between sleep quality and the timing of screen time, whether during the day or night. However, spending longer on entertainment content is claimed to result in shorter sleep duration and poorer sleep quality (Axelsson et al., 2022). Moreover, it is suggested that children often use mobile devices to play games and watch video or text messages before going to sleep; consequently, their sleep is disrupted, and they wake up due to the light from the screens (Van Den Bluck, 2003).

There are also some studies concerning excessive screen time and obesity. To illustrate, it is reported that prolonged screen time can also lead to obesity in children since they

often consume calorie-rich food and drinks when they encounter digital screens. Moreover, they tend to perform fewer physical activities because of the excessive screen time (Robinson et al., 2017). Supporting this idea research conducted with children aged fifteen and older discovered that playing video games resulted in the children consuming more food (Chaput et al., 2011). Another research conducted with younger children aged between four to seven demonstrated that decreasing the amount of time spent watching television and using computers resulted in reducing obesity over a two-year intervention period (Epstein et al., 2008). Obesity in children contributes to various health issues, such as sleep apnoea, diabetes and cardiovascular problems (Wolf et al., 2018).

### 2.4.2. Social and Emotional Development

The effect of children's digital play on their development is crucial and social-emotional development is one critical feature of healthy development (Simion & Banut, 2020; Walker & Weidenbenner, 2019). A literature review indicates that video calls and gameplay significantly influence children's social and emotional development. This paper will discuss the impact of digital engagement on children's social and emotional development, focusing on two types of engagement: video calls and game play.

#### 2.4.2.1. Video Calls

In contemporary society, children are separated from family members for various reasons such as work, divorce, immigration, or military duty. It is suggested that although the American Academy of Pediatrics (APP) indicates that children under 2 should not encounter screens, modern communication technologies such as smartphones and tablets help children and other family members who are separated from children to maintain family bonds. Consequently, parents utilise the technological environment to communicate with their children. Video calls are suggested to be one of the most effective ways for children and parents to maintain family bonds and communication, even for infants and toddlers (McClure et al., 2015).

Another study conducted by Tarasuik et al. (2011) examined the relationship between children's play when left alone and during video chats with their families. They

observed that interaction levels with parents were similar in video calls and in person. Moreover, children who were on video calls with their parents were less stressed, played for longer periods, and had richer play content. Moreover, it is suggested that compared to audio calls, video calls provide richer and more sustainable communication, especially for young children (J. Tarasuik et al., 2013).

Follmer et al. (2010) investigated children's playful activities when video conferencing with family members. They defined 3 different prototypes to understand children's shared play activities from a long distance. They observed "Find it game" activities where children are asked to search for objects with certain properties and "People in Books" activities in which children and family members collaboratively read a book. Family members are integrated as characters in a storybook to maintain family bonds by creating of being in a shared virtual environment (Follmer et al., 2010).

Supporting this idea, another study investigated child-grandparent video calls during the COVID-19 pandemic. It was found that video chat provided more closeness and enjoyment compared to audio calls. The visual elements helped keep children engaged and allowed them to share objects and experiences more dynamically (Strouse et al., 2021).

Recent studies have also shown that video chat can help young children develop social and emotional skills. Glick et al. (2022) claim that young children improve two key communication skills through video calls. The first one is turn-taking which promotes timely and relevant responses. The second one is maintaining familial relationships which means allowing children to interact with distant family members as if they were physically present. These interactions are suggested to be vital for children's social-emotional development and sense of security.

However, video chat has its limitations. Technical issues such as poor internet connections, the absence of shared interactions and misalignment of eye gaze can be observed during video call communication (Glick et al., 2022). Moreover, it is suggested that keeping young children fully engaged during video calls can be challenging (Strouse et al., 2021). Despite these challenges and limitations, research indicates that video call communication remains the most effective method after face-to-face

interactions as it offers a valuable alternative to comprehensive communication cues and immediate feedback (Glick et al., 2022; Strouse et al., 2021).

#### 2.4.2.2. Gameplay

Digital engagement is considered to hinder children's social and emotional development. To illustrate, from the research they investigated in a family childcare home Bacigalupa (2005) claims that video games distract children from engaging in real-life activities and interacting with peers. It is suggested that children demonstrate fewer verbal interactions and face-to-face communication while engaging in video games compared to other activities like dramatic play or group activities. They preferred to watch others playing instead of engaging in different activities. Moreover, children do not gain critical social and emotional skills from video games. They do not facilitate role negotiation, conflict resolution or empathy skills (Bacigalupa, 2005).

On the other hand, it is suggested that digital gameplay potentially improves children's social and emotional development, including empathy development which is one of the key characteristics of social-emotional development that prevents them from aggression, anxiety and depression (e.g. Saleme et al., 2020; Wu et al., 2020).

In their work, Wu et al. (2020) investigated the potential empathy education in preschool education with the digital game called "Empathy World" which is designed for empathy education to children, suggesting that integrating digital games into real-life play environments may promote social and emotional learning experiences. The game includes 30 interaction scenarios, each with increasing complexity in social and emotional stories and it is based on developmental principles to enhance empathic perception and selective attention. They observed children become more effective in making appropriate decisions and understanding other's feelings (Wu et al., 2020).

Another comprehensive study conducted with 364 children aged between 8 to 12 indicated significant improvements in children's emphatical behaviours who engage in activities with interactive comic books and robotic empathy machine intelligence (Saleme et al., 2020).

From their work, Marsh (2014) identified different social interactions in the online game children encounter. To illustrate, children communicate with each other by instant

messaging or sending postcards to each other, identifying themselves by choosing different clothing for their characters, performing different activities in the virtual world and participating in different events occurring in-game. Moreover, they used emoticons to express their feelings to the game community. Experiencing all these activities in the virtual world game “Club Penguin” encourages children to build social relationships, collaborative play and navigate social norms and expectations which are critical elements for social and emotional development (Marsh, 2014).

Both video calls and gameplay positively impact children's social and emotional development. However, the design of video games is critical; while some games are designed to enhance specific social-emotional skills, others may have no impact. Furthermore, both video calls and gameplay do not substitute real-life experiences but offer different alternatives. Despite potential technical issues, the research underscores the importance of parents managing screen time to mitigate the risks associated with excessive screen time and inappropriate engagement (Dy et al., 2023). To illustrate, some studies have revealed that the internet access provided by these devices may negatively affect children's social and emotional development, leading to issues such as cyberbullying and harassment. Cyberbullying represents bullying a person through text messages, e-mails or social media (P. K. Smith et al., 2008). Taunting, insulting and threatening through the internet might be considered common electronic bullying or cyberbullying behaviours Schneider et al. (2012) conducted research with 20406 students about cyberbullying. Approximately, 15% of children are reported to be victims of cyberbullying. Raskauskas and Stoltz (2007) explain two main features that distinguish cyberbullying from bullying. First, since bullying can occur at any time and in any environment, victims can feel unsafe even in the confines of their own homes. Secondly, the potential of anonymity in cyberbullying introduces an element of unpredictability, which can aggravate the fear and distress experienced by the victims (Raskauskas & Stoltz, 2007). Potential effects of cyberbullying are reported as stress, anxiety, lower self-esteem and depressive symptoms such as self-injury (Raskauskas & Stoltz, 2007; Schneider et al., 2012).

Moreover, research suggests that children encounter negative experiences such as requests to talk about sex, provide sexual information, engage in sexual acts, and be

harassed with rude comments or rumours spreading on social media. Research investigating unwanted sexual solicitation and online harassment that children experience suggests that 15% of 1588 children reported unwanted sexual solicitation and 33% of them reported online harassment (Ybarra & Mitchell, 2008). Moreover, there is evidence that children experience pornographic images and videos accidentally while using the internet (Flood, 2007).

### 2.4.3. Language Development

The research investigates the effects of technological engagement on children's language development, focusing on different age categories depending on children's age and the activities they engage in. Two main activities are represented in this part which are watching and gameplaying.

#### 2.4.3.1. Watching

Vandewater (2011) studied the impact of Baby Einstein's Baby Wordsworth DVD on the vocabulary development of 453 infants aged 8 to 15 months old. After viewing a DVD for a month children's vocabulary development was tested for any progress in receptive vocabulary (words that infants understand) and expressive vocabulary (words that infants speak). According to their data, infants who watched the DVD demonstrated greater gains in receptive vocabulary. In contrast, there was no significant difference in expressive vocabulary development compared to those who didn't see the DVD (Vandewater, 2011). However, Robb et al. (2009) claim that Baby Wordsworth DVD has no impact on infants' vocabulary development neither in receptive nor expressive vocabulary, according to their data collected from 45 infants aged 12 to 15 months. Moreover, they discuss that the DVD fails to capture infants' attention and contains complex vocabulary for their ages (Robb et al., 2009). Kirkorian et al. (2016) compared the impact of interactive and non-interactive video on word learning among toddlers. They compared 3 different video-watching conditions. In the first condition, children watched videos with no interaction (non-contingent). In the second condition, they were required to tap anywhere on the screen to advance the video. (general-contingent). In the final condition, children were directed to touch specific areas on the screen to progress

the video (specific-contingent). According to their results, while the general contingent did not develop word learning compared to non-contingent videos, young toddlers showed improvement in their word learning when their attention was directed to target information (Kirkorian et al., 2016).

Another study by Krcmar (2011) compared word learning in real-life action and video exposure. They suggested that infants performed worse in the same learning when the same words were presented in a DVD format. Moreover, they indicate that although educational DVDs capture infants' attention through virtual stimuli, they are not as effective as real-life action for language learning and development in children under two years old (Krcmar, 2011). It is also suggested that caregivers who physically interact with infants support children's language learning and development more effectively than passive media exposure (Krcmar, 2011). Strouse and Troseth (2014) also indicate that parental involvement is critical for toddlers to transfer the words they learn from videos into real life.

DeLoache and Chiong (2009) investigated whether infants could acquire new vocabulary through baby media and compared its effectiveness with parent-led teaching methods. The researchers involved 72 infants aged from 12 months to 18 months. They are divided into four groups, with vocabulary tests conducted before and after the four-week intervention. They claim that regardless of parental interaction, infants do not learn more words than those who do not watch educational DVDs (DeLoache & Chiong, 2009).

#### 2.4.3.2. Gameplaying

Walter-Laager et al. (2017) investigated the effectiveness of word-learning apps on two-year-olds vocabulary development. They compared the vocabulary development of children who used word-learning apps with those who used traditional picture cards. According to their data, children who used word-learning apps performed better than those who used conventional picture cards. Moreover, they identified two key factors in vocabulary acquisition: attention span and parental guidance. They claim that children who engage in the app with adult guidance focus on the subject matter for longer and learn more vocabulary (Walter-Laager et al., 2017). Another study compared ARWAK's

(Augmented Reality Wordbook App for Kindergarteners) effect on preschool children's language learning (Jain et al., 2018). Researchers compared children who used this app with children who were taught the same words using printed wordbooks over two weeks. The results indicated no significant difference in the number of objects the children could identify. However, according to teacher feedback, ARWAK increased children's interest and enhanced their engagement and participation in learning activities (Jain et al., 2018)

Dore et al. (2019) investigated the effect of an educational gaming application on preschool children's vocabulary learning. The game is designed depending on four learning principles: active involvement, engagement, meaningful context and contingent interactions to enhance vocabulary learning. Two different studies were conducted with children who engage in this gaming application. In the first study, children from middle socioeconomic backgrounds in a lab setting played the game for 10 to 12 minutes. In the second study, children from low socioeconomic backgrounds played the game over four weeks. The results suggested that children from both studies showed significant vocabulary acquisition. Specifically, children in the second study showed improvement in receptive and expressive vocabulary tests. Overall, this study claimed that mobile games can be effective in improving children's vocabulary learning over a longer period (Dore et al., 2019). Neumann (2018) investigated the effects of educational applications on preschool children's literacy skills. Adopting a pretest-post-test randomised controlled design, 87 children were randomly assigned to either an iPad intervention group or a control group. The intervention group engaged in interactive applications called Endless Alphabet, Letter School, and Draw Buddy which aim to improve children's literacy skills, whereas the control group did not engage in touchscreen devices. According to their result, children in the intervention group showed significant improvement in letter names, sound knowledge, name name-writing ability. The study claims that interactive educational applications effectively improve children's literacy skills (Neumann, 2018). Another comprehensive study by Amorim et al. (2022) investigated the effect of *Escribo Play*, an educational app designed to improve children's early reading and writing skills in low-income children in Brazil. The results indicated that children who played *Escribo Play* demonstrated more improvements in

reading and writing skills than those who did not. Moreover, children with better game performance also showed greater results in reading and writing tests (Amorim et al., 2022).

Moreover, scholars claim that digital play may aid children with specific learning disorders in reading and spelling skills. To illustrate, Görgen et al. (2020) investigated the effect of *Meister Cody-Namagi* on second- and third-grade children with reading disorders. Their study compared the children who engaged in the *Meister Cody-Namagi* application for 30 sessions from 8 to 11 weeks (training group) and children who played games that did not focus on language skills (control group). The results indicate that, although both groups demonstrated similar improvements in reading comprehension and spelling, the training group exhibited greater advancements in reading fluency, particularly with more complex words (Görgen et al., 2020). Another study by Witzel et al. (2024) investigated the effects of digital play on children with spelling disorders. Similar to the previous study, the participants were second- and third-grade children using the same application. However, they specifically focused on the impact of the application on spelling skills. The results revealed that while both the training and control groups improved in general spelling abilities, the training group demonstrated significantly greater progress, particularly in the accurate spelling of complex words (Witzel et al., 2024).

On the other hand, some scholars indicate that media exposure for children under two years old, except for video calls, may delay language learning (Anderson & Subrahmanyam, 2017a; Ponti, 2023). The negative impact of digital engagement is primarily related to overuse. Research claims that parental guidance and monitoring play a crucial role in children's digital engagement. One of the most effective ways to overcome the negative effects of digital engagement on children's development is through parental guidance and monitoring, especially for young children (e.g. Dere, 2022; Pedro et al., 2021; Zimmerman & Christakis, 2007). To illustrate, Hastings (2009) found that higher parental monitoring is associated with less violent gameplay.

### 2.4.4. Cognitive Development and Thinking Skills

The literature demonstrates the relationship between children's and adolescents' digital play and its impact on children's cognitive/intellectual development (e.g. Čoh, 2021; Masnawati et al., 2023). Both the cons and pros of digital play on children's development are discussed in the literature (e.g. Bochicchio et al., 2018; Schroeder & Kirkorian, 2016). Reviewing the literature, research indicates that the effects of digital on cognitive development are categorised. To illustrate, Anderson and Subrahmanyam (2017a) investigated the impact of digital engagement depending on the content of the engagement: educational and recreational.

Schroeder (2016) categorised preschool children into two age groups: 3–4-year-old and 4.5-5.5-year-old children. The study examined the effects of gameplay on children's numerical cognition (quantity) and biological cognition (growth). According to their data, young children demonstrated better learning when they watched other children playing, while older children learned from playing and watching others. It is also suggested that watching is more beneficial for young children since playing requires decision-making which demands more cognitive abilities. Furthermore, watching improves learning prior knowledge, whereas playing has no impact on learning prior knowledge (Bochicchio et al., 2018). However, other studies suggest that the interactive nature of digital play which requires active engagement enhances problem-solving skills which is a critical part of cognitive development (Haddock et al., 2022).

Another study investigated the role of digital engagement in shaping children's attention and cognitive control in the early years (Vedechkina & Borgonovi, 2021). Attention is described as limited cognitive research that allows selective focus on certain elements while ignoring anything else around them. Cognitive control also known as executive functions involves the mental process that supports motivation and goal-directed behaviours. As for television, it is suggested that the vivid and fast-paced images and attention-grabbing stimuli of television cause passive engagement, meaning children are less likely to look away from the screen, which does not contribute to cognitive control development. On the other hand, educational content can aid children in cognitive development. Moreover, early exposure to television is suggested to cause attention difficulties (Vedechkina & Borgonovi, 2021).

On the other hand, playing video games is considered active engagement as they require behavioural interactions and encourage players to solve problems they encounter in the virtual world (Vedechkina & Borgonovi, 2021). Numerous studies have shown that video games enhance visual attention (e.g. Green & Bavelier, 2003; Li et al., 2010) and executive control skills such as multitasking and task-switching abilities (Strobach et al., 2012). Moreover, studies which compare the cognitive skills of gamers and non-gamers indicate that gamers demonstrate higher levels of spatial skills (Uttal et al., 2013) and working memory (Moisala et al., 2017).

Research also indicates that digital play, specifically coding game applications, can develop children's computational thinking skills. For instance, data collected from interviews with teachers by Nouri et al. (2020) suggests that digital play can foster logical thinking, creativity, collaboration, and problem-solving skills in children from preschool to 9th grade. Another study by Liu and Iversen (2022) examined how social dialogues affect children's learning and experiences with tangible programming games. They collected data by observing a 6-year-old child, Derek, and his parents while Derek engaged in the game *Osmo Coding Awbie*. The study found that the emotional support and guidance Derek received from his parents improved his computational thinking skills and enhanced his metacognitive skills, such as problem-solving and planning strategies (Y. Y. Liu & Iversen, 2022).

A comprehensive study by Marsh et al. (2018) indicates that children engage in creative activities such as drawing and building in virtual worlds. The researchers suggest that the design of apps plays a critical role in determining the level of creativity encouraged. Apps that offer open-ended options, a simple structure, and age-appropriate interactions promote deeper engagement and greater creativity compared to those with complex interfaces and restrictive rules (Marsh et al., 2018). To illustrate, Minecraft, an open-ended game that is one of the most popular applications among children aged 3 to 12, offers different modes for players. In Creative Mode, players can build and explore the game world freely which improves children’s problem-solving, planning, and creativity skills (Mavoa et al., 2018). Additionally, story-creation apps that actively involve children using technological devices foster creativity by allowing them to take on

different roles, such as photographer or storyteller, and collaborate in flexible ways, including content splitting and space sharing with peers (Fails et al., 2010).

The effect of digital media on children's and adolescents' cognitive development is critical. However, the impact of digital media has various dependencies such as the age of children, device type, mode of engagement and the nature of the game (Bochicchio et al., 2018). Numerous research points out the importance of parental engagement, scaffolding and control on children's digital engagement, specifically for young children (e.g. Čoh, 2021; Kerai et al., 2022; Masnawati et al., 2023). Moreover, excessive screen time is reported to cause psychological problems such as addiction and attention-deficit hyperactivity disorder (ADHD). However, there is a debate about the relationship between children's screen time and ADHD. On the one hand, studies indicate that the potential risk of addiction to technology usage should be considered (Beyens et al., 2018). Clinical research to investigate the potential risk of digital addiction with 822 children aged 9 to 12 claims that approximately 12% of children are at risk of digital addiction (Hawi et al., 2019). Internet addiction is claimed to be associated with emotional and behavioural problems such as social isolation and personal hygiene neglect (D. L. King et al., 2012) as well as lower time management skills (Cao & Su, 2007).

Moreover, studies show the relationship between internet addiction and challenging behaviours in young children as well (Dere, 2022). Another study observed a link between playing violent video games and ADHD in children aged from six to ten. It also suggests a relationship between academic achievement and violent gameplay. Children who engage in violent content tend to have lower academic achievements compared to those who engage in educational content (Hastings et al., 2009).

On the other hand, research conducted with 865 children aged three to seven years claims there is no association between ADHD-related behaviours and the overall amount of television viewing (Nikkelen et al., 2015). Similarly, Zimmerman and Christakis (2007) claim that there is no connection between TV viewing, including violent content, on children older than 3 years old, while early television viewing, specifically noneducational and violent content, is associated with attentional problems.

## 2.5. Factors Affecting Children's Digital Engagement

Children's engagement with digital devices is affected by various factors. This phase aims to explore how these factors influence children's digital engagement. Reviewing the literature, the factors are divided into 2 categories: Environmental and Social Factors. Environmental factors are mainly related to children's access to digital devices which involves economic, geographical, locational, household and cultural factors that may also overlap with social factors that will be discussed further in detail. Social factors, on the other hand, also play a critical role in contributing to how children encounter digital content. It covers individual characteristics, such as age, gender and digital skills as well as the role of adults, including parents and practitioners. To contextualise these factors, the following section first considers children's digital play across global, glocal, and cultural contexts before examining environmental and social influences in detail.

### 2.5.1. Children's Digital Play Across Contexts: Global/Glocal and Cultural Perspectives

Children's engagement with digital devices across different contexts cannot be fully understood through their screen time or the types of devices and activities they encounter. Their experiences in digital worlds should be considered through interactions between media texts, everyday practices, social relationships, and cultural meanings. Some scholars reject the notion of children as passive media users, highlighting social, cultural, and contextual factors affecting children's digital media experiences (e.g. Alper et al., 2016; Elias & Lemish, 2009; Marsh, 2015).

Based on observations and recordings of a child named Gareth, Marsh (2015) argues that children engage with digital media not only as consumers. In her study, the child watched other children's YouTube videos featuring unboxing and playing with Lego pieces. She observed that the child interprets, appropriates, and reworks digital content through play. The child showed no intention to purchase the product. On the contrary, the child was positioned as a cyberflaneur oriented towards pleasure and curiosity. This perspective challenges the deficit assumption that global digital media inevitably foster consumerist desires. Instead, it highlights how children's experiences with global media

practices are active, appropriated, and connected to children's everyday play and meaning-making practices. Marsh (2015) rejects the idea of a linear consumption model, which assumes that children's behaviours are directly affected by media texts. Her study demonstrates that the meaning of unboxing videos is constructed through children's affective and playful engagement. It is suggested that watching videos becomes intertwined with tactile interaction, imagination, and peer-oriented meaning-making, particularly through the use of physical toys (Marsh, 2015). It can be interpreted that global media texts cannot be considered without taking children's lives into account. They become meaningful only in relation to children's play practices in different contexts.

Elias and Lemish (2009) investigated how digital technology, specifically internet use, supports immigrant adolescents' adaptation to a new culture and maintenance of ties with homeland culture. According to their data, many adolescents used the internet to learn about Israeli society, including where they live, such as exploring information about social norms, the education system, and popular leisure activities. They also found that found that immigrant adolescents often felt insecure and powerless after migration, but online spaces helped them regain confidence by valuing their cultural knowledge and skills. Through internet use, they moved from feeling marginalised to seeing themselves as competent and respected among their peers (Elias & Lemish, 2009). Moreover, internet use is suggested to maintain a bond with one's homeland and sustain communication with people from their homeland, as well as to follow news and events. They also indicate that the internet provides a safe environment for adolescents to socialise and connect with peers, thereby engaging with local culture (Elias & Lemish, 2009). Even though it is conducted with adolescents, this study might still provide a preliminary insight into younger children's media use, highlighting the value of media use, instead of simply considering it as passive screen use.

More recent studies with immigrant young children also demonstrate that considering children's global/glocal media use as passive might be too simplified. Based on observations of 10 immigrant children and interviews with their parents, Compton-Lilly et al. (2019) suggest that children experience both global and glocal culture through digital practices. They observed children watching cartoons in heritage language so that

they keep bound with their culture, but also experience global media culture such as Hello Kitty and Disney that help them to adopt the culture they live in (Compton-Lilly et al., 2019).

Collectively, these studies challenge deficit and passive understandings of children's digital media use and demonstrate ahow children actively use global and glocal media through their everyday play practices. These practices foster cultural and social meaning-making in different contexts. While these studies demonstrate children's active and meaningful engagement with global and glocal media in everyday contexts, Alper et al. (2016) extend this discussion by critically examining how dominant research frameworks have historically failed to account for such socially and culturally situated experiences.

Alper et al. (2016) examine how research on children, media, and technology has historically focused on Western, educated, industrialised, rich, and democratic populations. They argue that this limited focus fails to reflect the social realities of children growing up in increasingly diverse global societies, which embody differences in class, race, immigration status, and disability. These differences greatly influence how young populations engage with technology.

They call for a fundamental shift in how research approaches social differences. Since the deficit-based models that have dominated early research in the field emphasise what marginalised families and children lack as compared to the assumed 'normal', they tend to reinforce inequality and overlook their strengths. Therefore, they argue that this outdated framework should move toward an asset-based perspective. The differences should not be viewed as a problem to be corrected, but rather a strength that diverse families bring to their media practices (Alper et al., 2016).

Intersectionality is a critical tool for this desired shift. Alper et al. (2016) highlight that children's media experiences are shaped by overlapping social categories, such as gender, race, socioeconomic class, or disability. These factors do not operate independently. Rather, they interact with each other in complex ways, which produce both privilege and marginalisation. For example, a wealthy family with a child who has a disability might have the financial means to access assistive technology but would still face systemic challenges that other families do not. The authors suggest that an

intersectional approach enables researchers to better understand similarities as well as differences that young people face when engaging with digital media (Alper et al., 2016).

They also describe the concept of asset-based scholarship by illustrating how marginalised families use media in creative ways to solve problems. For instance, children often use their digital proficiency and local cultural knowledge to help the family navigate social institutions. Moreover, they state that joint media engagement, adaptive technology use, and intergenerational collaboration can serve as strengths rather than weaknesses. They help families maintain cultural connections and address everyday challenges.

In conclusion, Alper et al. (2016) call for a future where research challenges the notion of normal and prioritises children's rights and experiences in this digital era. They argue that adopting an intersectional and asset-oriented framework can help researchers produce socially-relevant and responsible research to work toward a more inclusive world (Alper et al., 2016). Recent studies similarly emphasise that adults' beliefs, values, and everyday practices play a central role in shaping how children's digital engagement is interpreted and regulated, highlighting that these meanings are constructed within specific cultural and institutional contexts rather than being universally defined (e.g. Azmitia et al., 2023).

Such work supports Alper et al.'s (2016) call for moving beyond deficit-based interpretations by foregrounding how families and practitioners actively negotiate digital media use in context-sensitive ways.

Building on this perspective, the present study responds to calls for more socially and culturally grounded research by examining how adults interpret and negotiate children's digital play within a specific national and institutional context. Rather than evaluating children's digital engagement against universal norms or deficit-based assumptions, this study foregrounds parents' and practitioners' perspectives in Türkiye to explore how meanings of digital play are shaped through everyday practices, cultural values, and contextual expectations across home and school settings. Within this broader cultural and contextual framework, the following section focuses on environmental factors that

shape children’s digital engagement, particularly in relation to access to digital technologies across home and school settings.

### 2.5.2. Environmental Factor

Children’s access to technology is influenced by economic and geographical factors in school and home settings (Timotheou et al., 2023). On a broader scale, this access varies significantly depending on the country where children live. For example, while many children in developed countries like the UK (Ofcom, 2024) and Western European nations (Smahel et al., 2020) have limited access to various technological devices, children in developing countries face even greater challenges. In Sub-Saharan Africa, for instance, more than half of the population lacks access to electricity, making it impossible for many children to use digital devices (Rodrigues-Segura, 2021). Meanwhile, children in developed countries spend considerable time using touchscreen devices. Household income is also a critical factor in children's digital engagement. Parents with higher education levels tend to provide more digital resources for their children, while lower-income families may not be able to afford computers or internet access (Pierce & Cleary, 2024). Even in developed countries like the United States, children's access to technological devices varies based on the household's income level. A comprehensive study conducted by Pierce and Cleary (2024) in the USA, involving 23,046 children from 50 different states, indicates that only 30% of children in households earning under $10,000 annually use computers at home, and nearly 40% of those have internet access. In contrast, approximately 65% of children in households earning $100,000 or more use computers at home, with more than 70% having access to the internet.

There is also significant inequality between children in rural and urban areas within many countries. Schools in urban areas are often better equipped with technological resources, while schools in rural areas frequently lack access to such devices (Paterson, 2007; UNICEF, 2021). The high costs associated with electricity and internet connectivity in urban areas can limit schools' capacity to maintain digital learning environments. Additionally, technical support is essential to sustain these environments.

In some countries, ministries of education provide technical support, while in others, schools rely on community resources (Paterson, 2007).

Research further suggests that children without access to technology at home are less likely to engage in digital activities at school (Pierce & Cleary, 2024). Moreover, the design and setup of classrooms significantly impact children's digital engagement. Classrooms with flexible seating arrangements, such as moveable chairs and tables, encourage more active interaction and collaboration among students (Closs et al., 2022). Furthermore, classrooms equipped with educational technology such as projectors, interactive whiteboards, and internet connectivity foster greater participation and peer cooperation, whereas traditional lecture halls with fixed seating hinder active engagement (Closs et al., 2022).

However, providing children access to digital devices does not enhance their engagement and learning. It is also crucial to provide structured learning activities using these devices to improve proficiency and engagement. Without a clear structure and purpose, providing access to educational technology might not translate into meaningful learning (UNICEF, 2021). For this reason, social factors are also critical to understanding the factors which affect children's digital engagement.

Moreover, scholars have discussed the cultural effects in the literature, categorising them as environmental or social factors. For instance, in an online survey conducted with 552 parents, Dardanou et al. (2020) found that while 90% of Japanese parents resist early digital exposure, nearly half of the parents in Portugal and Norway allow their children to interact with digital devices from a very young age. Additionally, in a study examining play preferences in four different countries, Isikoglu Erdogan et al. (2019) found, based on their interview and survey data, that Chinese and Turkish parents allow their children to engage in digital gameplay more frequently than parents from South Korea and the United States. The next section will discuss social factors that impact children's digital engagement.

### 2.5.3. Social Factors

Previous sections discussed environmental factors. This section will delve into social factors that impact children's digital play in school and outside of school settings. In this

section, first, the factors associated with the children themselves, including age, gender, digital skills, and peer impact will be examined. Subsequently, the role and attitudes of adults in children's play will be discussed. Finally, the attitudes and mediation strategies employed by parents and practitioners and their effects on children's digital engagement will be examined.

#### 2.5.3.1. Children's Characteristics

Children's age is one of the most important factors affecting their engagement with digital devices. Toddlers and infants have limited skills to fully manage and control devices, their activities are generally limited to watching content and making video calls. To illustrate, a study conducted by Lanna and Oro (2019) investigating the interaction of children up to 3 years old with drawing applications found that children under 2 years old do not fully operate touchscreen devices. Moreover, they suggested that children under 24 months old do not even intentionally use devices. The result demonstrates that children under 2 did not use touchscreen devices purposefully. They did not use colour palettes and erasers to create a drawing while children around 3 years old showed a greater range of gestures, including press gestures (Lanna & Oro, 2019). A more comprehensive study by Marsh et al. (2018) also indicated that children under 3 years of age engaged in passive activities, such as watching YouTube videos. Their digital skills are limited to tapping and swiping, and there is no evidence of intentional activity engagement. For instance, games and drawing applications require more digital skills than tapping and swiping. On the other hand, children aged 4 to 5 are observed using more complex applications in an active way such as drawing apps, storytelling apps and building apps. They are suggested to demonstrate more complex digital skills, such as solving puzzles, manipulating game characters, and creating art (Marsh et al., 2018). Supporting this research another study by Oliemat et al. (2018) indicated that children aged between 4 and 7 years old from Jordan possess the digital skills to perform plenty of tasks with tablets. From observations and interviews with children, they suggest that almost all the children have the basic skills required to operate tablets, such as scrolling and browsing, opening and shutting the devices, and recognising and starting applications. Moreover, approximately three-quarters can achieve moderate skills such

as using the internet for search and following game rules. While nearly half of the children know how to download applications and 37% of them are familiar with social media platforms (Oliemat et al., 2018). Furthermore, research suggests that older children have significantly more access to the internet compared to children aged 3 to 5 years old (Pierce & Cleary, 2024).

Gender is also considered to be a factor affecting children's digital device usage. While some studies found no significant difference between children's genders (e.g. Hu et al., 2024; Pierce & Cleary, 2024), others suggest that girls and boys prefer different types of apps. To illustrate, research indicated that while boys favour strategy and action-based applications, girls prefer creativity applications such as dressing up and colouring types of apps (e.g. Marsh et al., 2018; Oliemat et al., 2018).

Overall, children's age, digital skills and gender have a critical impact on the type of applications and activities they encounter. The next phase will delve into the role of adults in children's play and their attitudes and mediation strategies towards play in digital content.

#### 2.5.3.2. The Role of Adults in Children's Play

Adults play a central role not only in mediating children's access to digital technologies, but also in shaping how digital play is understood, valued, and legitimised within different contexts. Children need parents or carers for healthy development from the beginning of their lives. This also applies to children's play. All play practices emphasise the important role of adults in children's play. Adults, who may vary depending on the child's environment, such as parents or carers at home and practitioners at school, should provide children with an environment where they feel safe and can explore themselves and the outside world independently with their own decisions (Moyles, 2015).

Adults are suggested to establish a positive relationship with children and communicate with them while playing. This communication might be verbal or nonverbal. Adults need to understand children's play, ask them open-ended questions and give control of the conversation to the child (Howard & McInnes, 2013). This approach helps children to feel that the person who communicates with them is playful and engages in children's

play. Children are suggested to need playful adults who engage with them meaningfully since they make events more entertaining and enjoyable for them (Barnett, 2007). Moreover, adults need to give children time and space so that they can feel in control, make their own choices, and feel free in their play. Research suggests that providing feelings of freedom and power of control, letting them make their own decisions encourages them to engage in playful activities (McInnes et al., 2009).

Different play practices define different roles for adults. According to educational play practices, the role of adults is to balance child-oriented and adult-oriented play activities to support children's learning. In therapeutic play practices the role of adults is to provide space and time for children to play without directly engaging in the play process, emphasizing an indirective approach. As for recreational play practitioners, on the other hand, the role of adults is to prioritize children's control in their play and to support and facilitate their play (Howard & McInnes, 2013).

The role of adults is discussed from different aspects of play and defined different roles and approaches of the parents in children's play. Since the nature of play has evolved into digital, the role of adults is being reconsidered in the context of digital play which will be discussed in this phase. The role of adults is divided into 2 sections: The role and approach of parents and the role of practitioners.

#### 2.5.3.3. The Role and Approach of Parents in Children's Digital Play

As discussed in the previous phase, children's engagement with digital devices starts from very early years at home. Children's first experiences with digital devices start in their home settings with their parents or carers (Stephen & Edwards, 2018). As a result, parents' perceptions play a critical role in children's digital engagement. Although there is evidence that children around six can download and browse applications, in most scenarios, parents decide what applications children can engage with (Livingstone et al., 2014). Moreover, a survey conducted by Marsh et al. (2015) found that more than 60% of children's engagement with digital technologies is because their parents suggest it, with only a small percentage of children asking permission to use them. Studies also indicate that parents only allow children to engage with tablets in specific circumstances,

such as when parents have jobs to do or when children wake up early (Livingstone et al., 2014; Marsh et al., 2015).

However, some parents reported awareness of the educational value of children's digital engagement (Livingstone et al., 2014). The research shows parent's perspectives of children's digital use depend on various factors, such as economic, social and cultural. From the data they collected, Hollingworth et al. (2011) claim that while middle-class parents allow their children to engage in digital activities with their control and active supervision, working-class parents often restrict their children from using technology because they feel anxious about their lack of technological knowledge and potential risk of it.

It is also claimed that although the nature of play has evolved in the digital context of play, active participation and meditation of adults in children's play in the digital context is also critical just like traditional play as play theories indicated previously (Livingstone et al., 2014). One of the most comprehensive researches about parental strategies on children's development is conducted by Zaman et al. (2016). They investigated the dynamic nature of parental mediation strategies and the contextual factors affecting them to understand the parental perspective. They divided parent's mediation strategies into 5 groups as follows:

**Restrictive Mediation:** Parents restrict children's digital engagement to various factors such as time, device, content, location and purchase. Restrictions include when and how long children can use digital devices, which devices children can use under what conditions, what content can be used, which locations are suitable for digital engagement and purchase limitations.

**Co-Use**: Parents also reported participating in their children's media usage, motivated by shared interests, which often leads to conversations about the content they encounter. The role of parents is to assist and befriend their children by engaging in the activity together. While some parents act as helpers, assisting their children when they encounter difficulties, others participate in media activities to enjoy and bond with their children.

**Active Mediation:** Active mediation is where parents have instructive and evaluative conversations with their children about their media use which involves time, device, content and purchases. Discussion about time involves screen time and what time of the

day they encounter, whereas discussion about devices includes discussion about technical information and safety. As for content parents discuss the reason behind some content that is not appropriate for them, and purchases involve negotiating about the purchase rules.

**Participatory Learning:** This approach is a combination of active mediation and co-use. In this approach, both parents and children learn together about digital media, including technical/operational elements and extended learning. Operational learning is where children and parents collaboratively learn technical elements of digital devices and software, enhancing children's literacy skills, which are considered necessary for the future. Extended learning, on the other hand, is using digital media as a tool to connect the digital world and real-world experiences, acquire problem-solving skills and develop critical thinking by active learning.

**Distant Mediation:** This approach involves monitoring children's media use from a distance while allowing them to engage with digital media independently. There are two different approaches to this mediation strategy. The first is supervision, in which children can use digital media individually but under direct supervision. Parents generally adopt this approach when they are busy, staying within distance and being ready when assistance is needed. Deference, on the other hand, is an approach where parents do not intervene in children's digital engagement and give full control to their children.

By applying these strategies, parents aim to avoid the potential risks of digital engagement and foster a safe and educational environment for their children's digital engagement (Zaman et al., 2016). These findings are significant since parental concerns about morality, cultural values, and appropriate childhood practices strongly influence how digital play is regulated and interpreted.

#### 2.5.3.4. The Role of Practitioners in Children's Digital Play: Beliefs, Barriers, and Integration Frameworks

As previously discussed, parental perception and role in children's media use significantly affects children's digital habits. Research also indicates that the role of practitioners is critical as well. Ertmer et al. (2012) investigated research on teachers'

perceptions of technology use in the classroom and how internal and external factors influence its usage. They found a strong relationship between teachers' beliefs and practices; teachers who value student-centred beliefs tend to integrate technology into their education and overcome external barriers to technology use. Moreover, the teacher who believed in the critical role of collaborative learning integrated technological activities to foster peer interactions. The study also highlighted that technology is used in various ways depending on teachers' beliefs, such as reinforcing skills, enriching the curriculum, or transforming teaching practices into digital environments (Ertmer, Ottenbreit-Leftwich, et al., 2012).

Yondler and Blau (2023) investigated how the pedagogical ideas of teachers affect the development of digital literacies in students within technology-enhanced classrooms. They categorised teachers into four different typologies based on the levels of control and autonomy adopted by teachers, as follows:

**Sage-on-the-Stage:** Teachers in this category control most aspects of learning and provide clear instructions to children. This typology is associated with teacher-centred pedagogy, allowing minimal student autonomy and control.

**Facilitator:** Although the teacher remains a central figure, they allow children more interaction and active participation, balancing their control with opportunities to experiment and explore.

**Guide-on-the-Side:** This approach, on the other hand, emphasises student-centred learning, in which teachers provide more unstructured opportunities for students so that they can explore and build their understanding of knowledge.

**Partner:** Teachers who are categorised in this prototype not only encourage children to explore and build their understanding but also provide an environment for peer learning and collaborative work.

The research claims that teachers employ different strategies depending on their prototype. To illustrate, while Sages uses direct instruction, Partners provides a learning environment where children actively engage in problem-solving and complex learning. However, most teachers are observed as having teacher-centred characteristics. Consequently, educators and policymakers should better design professional

development programs which improve digital literacy instruction in schools (Yondler & Blau, 2023).

Adopting the same teacher prototype, Schwartz et al. (2023) conducted a study on how teachers from different cultures adapt their instructional strategies in technology-enhanced environments for English learning, a second language. They emphasised the importance of considering cultural differences when implementing technological tools for language acquisition, as these differences significantly impact the effectiveness of teaching methods. The study claims that cultural values significantly affect teaching practices. For instance, the emphasis on freedom and independence in North American education encouraged more student-centred instructional strategies. At the same time, the more rigid and centralised systems in Western Europe inclined towards teacher-centred methods (Schwartz et al., 2023).

Overall, the role of adults in children's play in both traditional and digital contexts is crucial for their development and learning. Adults, including parents, carers and educators should create a safe and stimulating environment in which children can explore and learn (Howard & McInnes, 2013). Moreover, they should engage in children's play by fostering positive communication, encouraging autonomy and giving them time and space to explore and learn is critical (McInnes et al., 2009). The same applies to play in a digital context as well. In their home setting, children's digital engagement is influenced by parental attitude. Parents adopt different mediation strategies, ranging from restrictive measures to collaborative learning. Research suggests that parental attitudes are affected by various factors such as socio-economic factors and cultural factors (Livingstone et al., 2014; Zaman et al., 2016)

On the other hand, educators significantly shape children's digital experiences in their school settings, depending on their beliefs and pedagogical approaches to integrating technologies into learning. While some teachers who value teacher-centred ideas maintain control and autonomy, teachers who value student-centred ideas encourage autonomy and collaborative learning (Ertmer, Ottenbreit-Leftwich, et al., 2012; Yondler & Blau, 2023). To sum up, both parents and practitioners play critical roles in children's digital engagement. They should balance between autonomy and freedom to foster children's development and learning (Schwartz et al., 2023).

Beyond their immediate mediation of digital play, practitioners' broader pedagogical orientations, confidence, and institutional contexts determine how technologies are embedded into early years education. A growing body of research shows that teachers' beliefs about learning and pedagogy profoundly influence their digital practices. Masoumi (2015) investigated how Swedish teachers' attitudes toward technology affect their integration of technology in early childhood education. Adopting Vygotsky's (1978) sociocultural theory, they visited Swedish preschools to collect data from teachers with field notes and interviews. Based on data collected from 6 preschool teachers, Masoumi (2015) identified 5 distinct views on the use of technology in Swedish preschools. While some of the teachers use technological devices *to enrich and transform existing curriculum and practices,* others reported that they use them *to keep children busy* and believed technology does not have an important place in ECE (Masoumi, 2015, p. 8). However, the most common use of technology is reported to be documenting children's activities, creating digital portfolios, and communicating with parents about the activities their children participated in (Masoumi, 2015). These platforms allow teachers to share photos, videos, and notes to illustrate children's learning progress and to show how technology can strengthen home–school connections. Interestingly, some teachers reported that they utilise technology to help immigrant children share their cultures and learn languages. Masoumi (2015) suggested that digital tools support cultural awareness, language development, and collaboration by letting children explore maps, music, alphabets, stories, and creative apps together.
Similarly, the study conducted in the USA found that preschool teachers use technology in ECE as a multifaceted tool for information access, planned learning activities, documentation, and communication with families (Bay & Hartman, 2025). Bay and Hartman (2015) reported that preschool teachers used digital technology to search for the questions children asked. According to their data, they also reported that it enables them to maintain immediate communication with families, sharing photos and videos of their children performing daily activities in the school. Moreover, teachers reported that they employ technology to document children's progress and their interests in digital apps, such as drawing apps. Teachers also observed that using a wide range of devices and applications to support media creation, research, play, and inclusive learning (Bay &

Hartman, 2025). Overall, American teachers reported that technology enhanced curiosity, creativity and communication. However, they also highlighted the risks of distraction, frustration, and over-dependence if used excessively, emphasising balance and diversity in learning experiences, just as Chinese (Dong et al., 2024; X. Liu & Pange, 2015) and Swedish pre-school teachers (Masoumi, 2015) stated.

A comprehensive study conducted with 316 public preschool teachers in China revealed that although Chinese teachers have positive attitudes towards integrating technology in ECE, most of the teachers had limited ICT training, low policy awareness, and modest confidence in their digital skills (Dong, 2018). While attitudes were favourable, pedagogical use was generally low: teachers tended to provide ICT resources and model basic operations rather than scaffold learning, foster peer collaboration, or integrate home–school digital practices (Dong, 2018).

Another comprehensive study with 317 ECE teachers in Australia, aligning with Dong (2018), found that although Australian preschool teachers have positive attitudes towards technology, Australian ECE classrooms are in short supply of digital devices (Pölzl-Stefanec, 2021). According to their data, the most used devices in Australian preschools are printers, PCs and laptops. Most teachers reported that technological devices are not used for pedagogical reasons, but for administrative tasks such as professional research, planning, documentation and communication with parents (Pölzl-Stefanec, 2021).

In Türkiye, according to current studies, the majority of Turkish preschool teachers have positive attitudes towards integrating technology into ECE. The study conducted in Turkish by Çelik et al. (2023) suggests that teachers use technology in their classes for many reasons. First, it is reported that Turkish preschool teachers utilise technology to improve their digital skills and for educational purposes. They reported that technology is used to visualise abstract concepts, enrich lessons, sustain children's attention and provide equal opportunities to children (Çelik et al., 2023). They also reported both positive and negative sides of digital technology. It is stated that it supports learning, curiosity and motivation, encourages digital literacy and reduces teacher workload. On the other hand, a Turkish preschool teacher suggested that it decreases peer interaction and social play. Although Çelik et al. (2023) found positive attitudes and educational use

of digital technology by Turkish preschool teachers, other studies suggest that technology integration does not always result in active or child-centred practices (e.g. Konca & Erden, 2021; Turgut & Aslan, 2021). To illustrate, the survey study conducted in Turkey with 167 Turkish preschool teachers shows that the common devices in Turkish preschools are computers and TVs and most of them have internet connections (Konca & Erden, 2021). Besides limited device availability in preschool settings, it is suggested that DT usage remains narrow and is primarily used for entertainment purposes. They suggest that teachers use these devices to support teaching, but do not use them in a child-centred way. According to their data, teachers use devices that keep children passive, such as watching cartoons or documentaries (Konca & Erden, 2021). Given the integration of DT into preschool education across countries, including Türkiye, it can be inferred that teachers in these countries express positive attitudes towards technology. However, inconsistencies between intended and actual practices may reflect deeper structural, pedagogical, and contextual barriers that shape how digital tools are ultimately enacted in early childhood settings. Across many countries, numerous studies discuss the barriers teachers face in implementing digital integration in early childhood education.

Across international research, teachers consistently highlight several barriers to effective digital integration in early childhood education, with some obstacles appearing far more frequently than others. For instance, a study conducted by Liu and Pange (2015) with 46 ECE teachers suggests that the most common barrier reported in Chinese ECE classrooms is a lack of technological devices. They pointed out insufficient hardware and software in school settings. Following this, teachers noted the absence of a clear pedagogical model or framework to guide technology-enhanced practices, as well as weak technical support, both of which further limited meaningful integration. In contrast, internal factors, such as teachers' confidence or attitudes towards technology, were mentioned less frequently and appeared to play a smaller role (X. Liu & Pange, 2015). More recent work by Dong (2018) claims that reinforces these findings by showing that teachers continue to struggle with limited ICT-pedagogy training and the lack of ECE-specific ICT initiatives or projects in China.

Ertmer et al. (2012) investigated barriers which teachers face to technology integration, which they grouped into external and internal factors. Interviewing 12 award-winning ECE teachers, they investigated barriers to integrating technology by American preschool teachers. They found that the primary obstacles were external, including insufficient resources, limited time, and limited administrative support. Internal barriers, which include teachers' attitudes toward technology and their confidence, were mentioned but played a minor role.

Similar to the patterns observed in international studies, preschool teachers in Türkiye have reported facing comparable barriers to integrating digital technologies in early childhood settings. Kara and Cagiltay (2017) categorised the problems teachers face when implementing technology into 2 categories. First, infrastructural problems, including a lack of hardware and software, and overcrowded classrooms. The second one is pedagogical barriers, in which teachers noted difficulties in giving all children equal access and time, due to limited devices available. Moreover, they reported insufficient technological skills and knowledge to integrate technology in their teaching (Kara & Cagiltay, 2017). Aligning with this, a more recent and extensive study conducted with 167 Turkish preschool teachers by Konca and Erden (2021) pointed out the mismatch between positive attitudes towards technology and persistent pedagogical barriers that hinder practical implementation. According to their data, several recurring issues are identified as follows: insufficient technical support, limited pedagogical training specific to technology integration, time constraints within the daily routine, and deeply rooted traditional conceptions of play and learning, which collectively restricted opportunities for child-centred and innovative uses of digital tools (Konca & Erden, 2021).

To sum up, across different countries, ECE teachers face many challenges in integrating digital technology into education. Many ECE teachers report that technology is used for administrative rather than pedagogical purposes (Bay & Hartman, 2025; Pölzl-Stefanec, 2021). Teachers not only demand more hardware and software support but also more training opportunities to integrate DT into ECE. Some scholars suggest that although school settings are not well-equipped in terms of DT, the reason behind not participating in activities, including DT, is not a lack of hardware or software but a lack of technical

and pedagogical knowledge (e.g. Ertmer et al., 2012; Konca & Erden, 2021; Pölzl-Stefanec, 2021).

#### 2.5.3.4.1. The Role of Teachers in Digital Technology Integration: The TPACK Framework

This also suggests that effective technology integration cannot be addressed by either integrating more hardware and software into school settings or providing technical training for ECE teachers. It also requires a framework that captures how teachers connect technology with pedagogy and developmental content. To fill this gap, Mishra and Koehler (2006) constructed a theoretical framework which explains the complex and situational knowledge that is necessary to implement technology in education.
The theory is called TPACK or TPCK, Technological Pedagogical Content Knowledge, which is the combination of CK (content knowledge), PK (pedagogical knowledge) and TK (technological knowledge).
CK involves a teacher's understanding of the subject matter they try to teach. PK refers to a teacher's understanding of how to effectively teach and the process of learning. TK encompasses a teacher's understanding of how to utilise technological and non-technological tools in a school setting. Together, they connect to create additional forms of knowledge as follows.
PCK (Pedagogical Content Knowledge) involves having knowledge of how to represent concepts, understanding what makes them easy or hard for children and how to address common misconceptions and leverage students' prior knowledge. TCK (Technological Content Knowledge) refers to teachers' understanding of how technology reshapes and interacts with content. It highlights that teachers should understand both the knowledge they aim to teach and how technology may modify, transform or even extend the way content is taught and presented. TPK (Technological Pedagogical Knowledge) is the knowledge of how to use different types of digital technologies in education. It includes how technology can change or reshape teaching and learning. Teachers should know how to benefit from technological devices, what devices/apps fit their aim to teach aimed subject. Moreover, teachers must have a solid foundation of pedagogical knowledge and be able to integrate this knowledge effectively with technology. It also

requires teachers to have a solid understanding of their subject matter and to be able to integrate this knowledge effectively with appropriate technologies (Mishra & Koehler, 2006). It is essential to recognise each of these knowledge domains to discuss TPACK, as it only becomes understandable when considered in relation to one another.

Mishra and Koehler (2006) suggest that teacher training programmes generally assess these three areas of knowledge independently, teaching them separately. This framework claims that meaningful integration of technology into education cannot be achieved by mastering each of these knowledge domains in isolation, but only when they interact within a specific teaching context. Mishra and Koehler (2006) highlight that effective digital practice requires teachers to make context-sensitive decisions about how technological tools can transform both instructional strategies and representations of subject matter by emphasising the interplay between technology, pedagogy, and content knowledge. TPACK framework objects to the idea of technology as an optional addition. On the contrary, it positions technology within the fundamental structure of instructional design. Mishra and Koehler (2006) also highlight the critical role of teachers managing these intertwined knowledge domains within authentic learning environments.

Recent studies investigated teachers' technological, pedagogical and content knowledge, adapting TPACK. To illustrate, Colon et al. (2023) investigated TPACK among 825 primary and preschool teachers. Collecting first-hand data, they found that teachers feel confident in PK and TPK. They rated themselves highly in adopting technology in their activities and showed critical reflection on how technology shapes teaching. TCK was the highest in reading/writing activities, while it was lower in math and social activities. Interestingly, although ECE teachers positively rated themselves in TCK science activities, they scored themselves lower in TK, TPACK and TCK in other activities compared to primary school teachers (Colón et al., 2023). This aligns with the study by Valdez et al. (2025), who found that preschool teachers scored high in CK and PK but low in TK, TCK and TPACK. According to their study, ECE teachers considered technology as an additional tool; rather, they preferred traditional tools. Some of the teachers reported feeling anxious using DT with young children (Valdez et al., 2025).

Both Colon et al. (2023) and Valdez et al. (2025) suggested that ECE programs still lack models of developmentally appropriate technology usage. Moreover, Valdez et al. (2025) claim that since TPACK is not specifically intended for ECE, it demonstrates limited information in digital play, child-centred digital use and co-use of DT with peers or teachers. Consequently, ECE teachers may face unique challenges in integrating digital practices into their teaching. They also may need to consider child development theories and the play-based nature of the ECE curriculum.

Aligning with this, another study by Lim et al. (2024) suggests that although American ECE classrooms are well-equipped, teachers still minimally use technology and have concerns about overuse, passive screen time and age-appropriateness. They suggest that teachers' beliefs about technology strongly affect their digital practices and investigated ECE teachers' beliefs before and after receiving training on digital technology integration (Lim et al., 2024). Before receiving training, most teachers conveyed that they did not have formal training. After attending the course, although a minority of teachers still hold negative attitudes towards technology, most teachers' beliefs about technology have shifted to more positive and constructivist orientations. Lim et al. (2024) observed increases across all dimensions of TPACK, particularly in PK, TCK, and TPK. Consequently, studies suggest that TPACK should be integrated into teacher training programs (e.g. Colón et al., 2023; Lim et al., 2024; Valdez et al., 2025).

On the other hand, TPACK is criticised, focusing on only teachers and ignoring cultural and environmental factors (Wang et al., 2025; Yang & Dong, 2024). Yang and Dong (2024) claim that neither TPACK alone nor the ecological system alone is enough to understand the implementation of DT into ECE. They suggest that in the ECE context, content is broader than school subjects, and it includes play-based activities and developmental domains. Based on the interviews with 30 teachers and class observations, Yang and Dong (2024) found that teachers integrate technology in their teaching according to their TPACK. They consider all dimensions of TPACK, including children's learning styles, attention spans and whether digital activities suit the content. Interestingly, they found that although teachers use ICT for similar purposes, they might use them in different ways in terms of their PCK (Yang & Dong, 2024). To illustrate, they observed, while one of the teachers used DT to visualise, another one used it to

trigger discussion. In the first activity, children watched the scenario passively. In the second activity, on the other hand, children actively engaged and co-constructed the knowledge. They concluded that teachers' TPACK is personal, situated and dynamic, shaped by their experiences and cultural factors (Yang & Dong, 2024). Moreover, they claim that different layers of EST played a critical role in teachers' ICT use. As for microsystem, the size of the classroom and the availability of technological resources are the key factors. At the mesosystem level, colleagues affected teachers' beliefs about DT use.

Wang et al. (2025) argue that teachers' technology integration is not a deficit of TPACK alone but as a value-mediated process governed by Developmentally Appropriate Practice (DAP). They highlight that TPACK does not alone translate into confident integration unless it corresponds with DAP principles. These principles are considered to be normative and a cognitive filter through which teachers evaluate whether digital tools are age-appropriate and provide valuable insight into children's development. Consequently, teachers raise concerns about the developmental suitability and screen exposure, even though they have confidence using DT in ECE (Wang et al., 2025). They suggest that integration of DAP and TPACK is necessary to effective technology use in ECE depends not only on teachers' TPACK but also on their developmental values and professional judgments, situating TPACK within a broader ecological framework, which is EST in this study, and the ethical decision-making process (Wang et al., 2025).

To summarise, teachers' approaches to digital integration in early childhood education are shaped by a range of factors, including their pedagogical beliefs, confidence, access to training, and broader cultural and institutional contexts. While some educators embrace technology as a means to enrich and transform learning, others use it for administrative purposes or express concerns about its developmental appropriateness. The TPACK framework provides a useful lens to understand the multifaceted knowledge required for effective technology use; however, research suggests that successful integration also demands alignment with developmentally appropriate practices and ecological conditions. Therefore, supporting practitioners through context-sensitive training, pedagogical models, and institutional support remains essential to realising the full potential of digital technologies in early years education. It can be

interpreted that, in contrast to parents' home-based mediation, practitioners' discourses are more strongly shaped by institutional expectations, curricular demands, and professional beliefs, leading to different interpretations of digital play and its educational value. Overall, the literature underscores that adults play a central role in mediating children's digital play, while social, cultural, and environmental factors across home and school contexts shape how digital play is interpreted and regulated.

### 2.6. Conclusion

This phase has provided comprehensive insight into children's play, starting from the historical and theoretical foundations of how digital technology changed their play. It examined key findings of play in educational, recreational, and therapeutic contexts, as well as developmental impacts, adults' perspectives and factors that affect children's digital experiences.

Phase 1 provided a foundation by examining traditional play theories, such as Freud, Vygotsky and Erikson. Moreover, development theories point out the critical role of play in children's cognitive, social, and emotional development. However, the nature of play has shifted to a digital context, and these theories need to be reconsidered in the digital play context.

Phase 2 delved into how digital tools, especially touchscreen devices, have become a central part of children's daily lives both at home and in educational settings. Moreover, it highlighted how these devices provide unstructured and structured play and learning opportunities for children in educational, recreational and therapeutic settings (Fantozzi et al., 2018; Hatzigianni et al., 2018).

Phase 3 explored the developmental and learning outcomes of digital engagement. On the one hand, studies highlighted the positive effects of digital technology on physical, social, language, emotional, and cognitive development, especially when children actively engage in these devices (e.g. Cattoni et al., 2024; Moon et al., 2019). On the other hand, negative impacts are addressed by some scholars, especially prolonged screen time is suggested to result in health issues, such as sleep quality, obesity and addiction (e.g. LeBourgeois et al., 2017; Wolf et al., 2018; Yadav & Chakraborty, 2022). Moreover, how the type of interaction impacts its effects is discussed in this phase,

suggesting that while active engagement fosters learning and creativity, passive engagement brings about negative outcomes (Mustola et al., 2018; Souto et al., 2020). Finally, Phase 4 examined the diverse factors shaping children's digital interactions, categorised into environmental and social factors. Environmental factors are mostly related to children's access to digital devices and their quality at home and in educational settings, including household income, geographical locations, and classroom design (Pierce & Cleary, 2024; UNICEF, 2021). Social factors, on the other hand, are associated with children's age, gender and outside factors such as parents' and practitioners' attitudes toward children's digital engagement, which has a tremendous impact on children's digital experiences. Recent studies emphasise that practitioners' pedagogical beliefs, institutional contexts, and access to developmentally appropriate frameworks like TPACK play a critical role in shaping how digital tools are integrated into early years education.

# CHAPTER 3 METHODOLOGY

## 3.1. Introduction

The previous chapter provided a comprehensive discussion about children's play and play in the digital context. This chapter will delve into the methodological framework this research employed. Starting from research questions, this chapter will demonstrate the objectives of qualitative and quantitative research design and how to integrate statistical and narrative data with a mixed-method approach.

Adopting critical realism as ontological and epistemological perspectives, how Bronfenbrenner's ecological systems theory and Howard and McInnes's (2013) play typology are used to understand children's digital play from the eyes of adults, contextually, from a broader perspective will be explained in detail. Moreover, every stage of the ethical process, which includes pre-data collection, during-data collection and post-data collection, will be explained in detail.

Following ethical considerations, the chapter also provides details of data collection methods, describing how surveys and interviews are employed. Moreover, the methods adopted for data analysis will be explained in this chapter, emphasising how different approaches are used to explore research questions. Overall, all these elements mentioned will provide insight into children's engagement with digital devices from the perspective of practitioners and parents.

At the beginning of this project, this research also aimed to engage children directly to gain an understanding of their digital play as some scholars indicates the value of children's own voices in research related to them (e.g. Christensen & James, 2017; Graham & Burghardt, 2010), adopting visual tools for young children to amplify their perspective (Spyrou, 2011). However, this was not possible due to Ministry restrictions and therefore, the remainder of the method section will examine alternative methods for use with parents and practitioners, as per the research questions adopted. Consequently, this methodology is designed to explore how parents and practitioners in Türkiye interpret, value and regulate children's recreational and educational engagement with digital devices within home and school contexts.

### 3.2. Research Questions

The study will explore the following questions:

1- In what way do practitioners and parents report children use technology within and outside of the educational context?

2- What are practitioners' and parents' perspectives on children's use of digital technologies within and outside an educational context, and their potential learning and developmental outcomes?

3- What factors do parents and practitioners believe impact children's engagement with digital devices?

### 3.3. Research Methods: Qualitative and Quantitative

Although his ideas are strongly discussed and denied, positivist approaches have formed the foundation of the epistemological assumption of quantitative methodology in social science. Supporting this idea, according to Bryman (1984), the quantitative methodology is

> *"…routinely depicted as an approach to the conduct of social research which applies a natural science, and in particular a positivist, approach to social phenomena."* (p. 77).

Natural sciences can be considered descriptive since physical behaviours are defined through mathematics, empirical since relevant variables indicate observables, functional as each input is in relation to exact outputs, and deterministic since the results are predictable (Baškarada & Koronios, 2018). Moreover, quantitative methods reflect the positivist paradigm's assumptions that posit behaviour can be explained through objective facts (Firestone, 1987). In the positivist approach, researchers aim to be free of bias by following strict methodological rules (Park et al., 2020).

The epistemological stances of qualitative, on the other hand, reject the positivist approach (R. B. Johnson & Onwuegbuzie, 2004). The basic principles of constructivism and interpretivism (the epistemological approaches of qualitative research) discuss that there are numerous constructed realities, and making generalizations is not possible nor desirable without consideration of time and context (Guba, 1990). Moreover, they

suggest that research cannot fully distinguish causes and effects since it is influenced by values. The logical flow of those approaches moves from specific instances to general conclusions and reality is subjective (Guba, 1990; Schwandt, 2000).

While quantitative research provides broad, generalizable, statistical, and objective data; qualitative research contributes deep, rich in details, and word-oriented data (Ryan, 2006; Sieber, 1973). Both of these research methodologies or paradigms have their strengths and weaknesses (Creswell & Creswell, 2023). To illustrate, qualitative data provides detailed perspectives about people's views; however, it indicates smaller data sets compared to quantitative studies. Quantitative data, on the other hand, concludes large numbers of people; however, it provides a limited understanding of the context of the data (Creswell, 2015).

A review of the literature reveals a methodological diversity in studies investigating children's interactions with digital devices, encompassing both qualitative approaches (e.g. Işıkoğlu et al., 2023; Keya et al., 2020; Swart et al., 2023) and quantitative (e.g. Mavoa et al., 2018; Zhu et al., 2021) methods.

As for quantitative research, Mavoa et al. (2018) adopted a quantitative survey approach to understand children's engagement with Minecraft. Quantitative surveys allowed them to collect data concerning demographic information, such as gender patterns in the gameplay. Their data consists of 753 parents of children, another strength of quantitative data because of the sample size. On the other hand, this study has its limitations. First, the study focuses on specific geographic regions, limiting the generalizability of findings. Moreover, self-selection bias is another concern, as participants (parents) may have stronger opinions about screen time, which has the potential to skew the data. Another issue they suggested was that participants may not fully observe or understand children's digital engagement. These factors could affect the reliability and applicability of the results.

Another example is the study conducted by Zhu et al. (2021), which employed a quantitative cross-sectional survey design to investigate the frequency of leisure and problematic gaming activities during school closures because of the COVID-19 pandemic, while exploring the effects of loneliness, family support and children's gender. While a large, diverse sample size with 2863 participants can be considered a

strength of this research, limitations can be observed, such as oversimplifying participants' experiences and motivations with numerical scores. The research lacks information in relation to individual experiences and cause-and-effect relationships because of its cross-sectional quantitative nature.

On the other hand, qualitative research has its own strengths and weaknesses. To illustrate, employing qualitative methodology, Isikoglu et al. (2023) used semi-structured interviews, observations and diaries to collect their data. Using different data collection methods and multiple sources improved the credibility and reliability of their research. The qualitative nature of the data provided nuanced experiences of both children and parents. However, the small sample size was limited to 5 families, which restricts the generalizability of the findings.

Another example from Swart et al. (2023) adopted qualitative research using semi-structured interviews and observation to investigate children's digital engagement. They observed children for more than 4 months in the Netherlands. By adopting observation and interview for data collection, the study provided valuable insights into children's play behaviours. However, the study is limited to Dutch children's after-school programs, which is a natural limitation of qualitative research. Moreover, the presence of the observer may have influenced children's play behaviour, introducing potential bias.

Although qualitative and quantitative research differ in their perspectives on knowledge and methods of obtaining knowledge, combining these two approaches has the potential to strengthen their limitations. As illustrated above, qualitative research provides deep insight into detailed information but is limited by its smaller sample size. Quantitative research, on the other hand, offers statistical results and generalizable results while it lacks rich and detailed discussions. By leveraging the strengths of both methodologies, scholars adopt a mixed-methods approach to gain a more holistic understanding of complex phenomena, including children's digital play. This integrated approach allows for a deeper investigation of broad patterns with detailed individual experiences, mitigating the weaknesses in relying on a single method. In the next chapter, a mixed method and its design will be discussed, with an example illustrating its application in the context of children's digital play.

### 3.4. Mixed Method: A Third Paradigm

The mixed method has become increasingly popular in child research in recent years (Mason & Hood, 2010). It is often optimum for much social science research as the integration of the two data sets allows a comprehensive and often contextualised exploration of the research questions. However, the researcher should carefully take into account both quantitative and qualitative characteristics (R. B. Johnson & Onwuegbuzie, 2004). Understanding the strengths and weaknesses of qualitative and quantitative research, the mixed method aims to create a research approach with fewer limitations by utilising the strengths of both methods (Creswell & Creswell, 2023). Supporting this idea, according to *fundamental principles, mixed method* researchers should gather various data using different strategies, approaches, and methods to ensure that the combinations leverage strengths that complement each other while minimising any weaknesses that do not overlap (R. B. Johnson & Turner, 2003).

To justify adopting a mixed method in this study, it is critical to explore its advantages and disadvantages in research on children's play in the digital context. To illustrate, a comprehensive study by Leonhardt and Overa (2021) adopted a mixed method to investigate gender differences in technology use among Norwegian children aged 11 to 19. The study effectively combined quantitative and qualitative data. Over 5000 students participated in the survey and 25 children were interviewed. Quantitative data provided statistical information about the use of technology by boys and girls. Girls favour social media, whereas boys prioritise gaming. On the other hand, the qualitative part of the study provided more insights into their preferences. To illustrate, it provided information in relation to gender differences in gaming view. Boys identified gaming as an enjoyable activity related to youth culture, whereas girls saw it as a childish activity and demonstrated conflicting attitudes toward gaming culture (Leonhardt & Overå, 2021). Combining statistical patterns with personal perspectives, the mixed method approach offered a nuanced understanding of gender differences in technology use. On the other hand, the mixed method has its weaknesses. For instance, it requires a significant amount of time and effort for a researcher (R. B. Johnson & Onwuegbuzie, 2004). Overall, the mixed-method approach offers valuable insight into children's engagement with digital technologies by combining statistical patterns with personal perspectives.

Based on this foundation, the following chapter will discuss the specific mixed method designs adopted in this study, investigating how mixed methods approaches can be adopted to address research questions.

### 3.5. Methodological Approach: Mixed Method Design

To effectively investigate children's engagement with digital technologies and their potential learning and developmental outcomes, this study adopts a mixed-methods research approach. This chapter investigates the mixed method design used in this study, highlighting different categorisations and the reasons behind its selection.
The mixed-method research design can be categorized into 2 main groups (R. B. Johnson & Onwuegbuzie, 2004):

1- Mixed-Model Design: This design aims to integrate or mix both qualitative and quantitative methods at different stage or stages throughout the research process.
2- Mixed-Method Design: In these designs, on the other hand, the researcher explicitly plans to collect and analyse both quantitative and qualitative data to answer the overall research question(s) by representing them as different phases.

This research adopts a mixed-method design since the research questions are defined before starting the project. Mixed-method design can mainly be categorized into 3 different groups (Tashakkori & Teddlie, 1998):

1- Equivalent Status Design: Researchers may adopt this design when they give equal importance to the qualitative and quantitative phases of the study.
2- Dominant-Less Dominant Design: This type of design may be used when either qualitative or quantitative phases play a more influential role in the research process.
3- Designs with Multi-level Use of Approach: This design includes the integration of multiple levels of both quantitative and qualitative approaches.

In equivalent status design, both qualitative and quantitative methods may be used sequentially, and qualitative or quantitative approaches can be analysed first, followed by another method. An alternative strategy is to analyse qualitative and quantitative methods simultaneously. One of the key features of equivalent status is giving equal

importance to both methods (Tashakkori & Teddlie, 1998). This study adopts a mixed-method approach to investigate children's engagement with digital technology. The methodology includes an initial phase of quantitative surveys administered to parents, followed by semi-structured qualitative interviews conducted with both parents and practitioners. This design enables a comprehensive exploration of the topic by integrating statistical insights with in-depth perspectives, aligning with established research practices in the field. Although the quantitative data will provide valuable information about demographic patterns, the qualitative data will offer deeper insights into children's digital experiences, including their motivations and outcomes. Consequently, this thesis can be categorised as qualitatively dominant research.
While the choice of a mixed-method design provides a robust framework for investigating children's digital experiences, it is equally important to ground this methodology in a philosophical perspective. The following section explores critical realism and critical theory as the guiding philosophical frameworks for this research.

### 3.6. Critical Theory and Critical Realism

The previous chapter discussed the reason behind the adaptation of a mixed-method design for this project. However, it is also critical to integrate it with a philosophical framework as it addresses both ontological and epistemological dimensions, ensuring how natural and social science might be integrated to answer research questions. Philosophy examines the ontological and epistemological dimensions of the social science. To a broad extent, it deals with the definition of the social world and the reason behind researching it. On the other hand, it addresses theoretical and methodological issues (Wai-chung Yeung, 1997).
Roy Bashker (1975) has widely designed and proposed critical realism. It discusses "*the distinction between natural (e.g., global warming), the social (e.g., social stratification), and the psychological (e.g., learning disabilities) objects and structures, and the activities of science and other knowledge generating processes."* (Ryba et al., 2022, p. 155). Moreover, one of the key characteristics of critical realism is its focus on ontology. According to critical realism, objects and structures are complex and dynamic and often characterized by multiple layers that consist of various elements, such as

physical, biological, and psychological components. However, it is critical to note that although layered, they do not imply multiple equally valid truths (Iosifides, 2017). Bashkar (1998) argues the idea that there are two types of knowledge: Intransitive knowledge is one side of knowledge that occurs naturally without the effect of human beings. Transitive knowledge, on the other hand, is human-generated or human-related knowledge such as facts and theories (Zachariadis et al., 2010).

Critical realism aligns effectively with mixed-method research as it addresses issues of both natural and social science systems at the same time (Zachariadis et al., 2010). The discussion of using statistical modelling from a critical realist perspective varies depending on the research field, those who entirely ignore statistics in a realist perspective or particularly accept it, and those who consider statistics particularly valuable and come up with an idea of using statistics under a critical perspective (Zachariadis et al., 2010).

Research that adopts critical theory is expected to allow its participants to explain their views. However, adults might interpret children's perspectives based on what they perceive children (James, 2007) since children's ability to explain their experiences and thoughts is limited (Alderson, 2016).

Based on the discussion above related to critical theory and critical realism, the position adopted in the current project is framed by critical realism, which offers valuable insights into children's digital experiences through a mixed-method approach that integrates natural and social sciences with both statistical and narrative data.

### 3.7. Theoretical Frameworks: Ecological Systems Theory and Play Categorisation

Children's engagement with digital devices, the focus of this study, takes place within wider social systems and therefore needs to be understood contextually. For this reason, this research adopts Ecological Systems Theory to understand children's digital experiences in home and school environments.

Ecological Systems Theory (EST) is a framework developed by psychologist Urie Bronfenbrenner (1979). This theory explains how the development of a child is affected by interactions with people, objects, and symbols in their environment. The Process-

Person-Context-Time (PPCT) model, which is a part of this ecological system, explains the interaction among four key elements of the individual (Bronfenbrenner, 1979).
In this system, **process** refers to active and dynamic interactions between the child and their environment; **person** represents a child and their characteristics; **context** means different environments that children encounter which consist of microsystem, mesosystem, ecosystem, macrosystem, and chronosystems; and **time** posits that development occurs over time and that is affected by temporal factors.
This research has digital engagement and digital play activities as processes, children as the person, and two environments of school and home as the context and the time spent by children in these environments. The EST framework is applied to this research since it explains contextual factors that affect children's digital engagement and its potential outcomes with a holistic perspective (Scott et al., 2023)
The context of Bronfenbrenner's EST consists of 5 nested structures, each inside the next (1979). However, it is suggested that EST might be considered a networked system rather than a nested system (Neal & Neal, 2013). The advantage of a nested system for this research is to visualize different microsystems and demonstrate the shared impact of these 2 separate microsystems on children in a common intersection set.
Figure 1 illustrates Neal and Neal's (2013) networked EST model, reoriented by Scott et al. (2023) to visualize children's digital play. They suggested that children engage in different microsystem environments and interact with different people in these environments (Neal & Neal, 2013).
This research specifically focuses on children's digital engagement in two microsystems, which are the family and school environments. Nael's (2013) networked EST framework is reoriented and visualized for this research which can be seen in Figure 2. It shows children being at the centre of and family and school environment. Moreover, it can be seen in Figure 2 that the different people that children encounter in these 2 different environments are the mother, father, and siblings in the family microsystem and practitioners, teachers, and friends in the school microsystem. Both family and school environments and children's interaction with people in these environments directly affect children's development (Neal & Neal, 2013). Although this research focuses on two different microsystems, studying any single system of EST in isolation is

not achievable, since another system will inevitably have an impact. To illustrate, while investigating children's digital interaction, I may encounter cultural elements belonging to Turkish culture, which is an element of the macrosystem in the EST system.

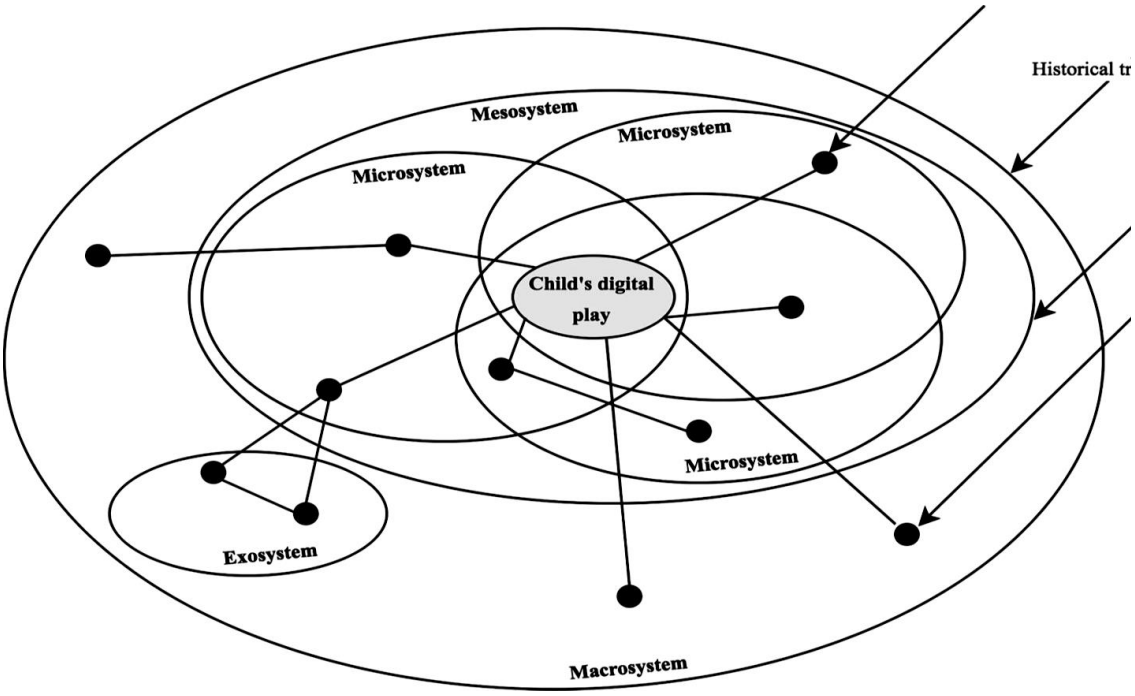


**Figure 1. Networked EST system found by Neal and Neal (2016) reorganized and visualized for children's digital play by Scott et al. (2023).**

Scott et al., (2023) used a networked ecological system to compare children's digital play in the United Kingdom and South Africa at micro, meso, exo, and macro level. The ecological model provides information about the impact of the physical and social environment on children's digital play in different cultures.

The findings show the effect of environment, individuals, cultures, and politics on children's digital play (Scott et al., 2023). The advantage of adopting EST is to gain "…*holistic view of the contextual factors that influence children's play with digital technologies, rather than focusing solely on issues of access*." (Scott et al., 2023, p. 353). Similarly, this study aims to demonstrate the influence of individuals and environments on children's digital play by utilizing a multi-faceted approach that incorporates various socio-cultural factors and environmental contexts.

Bronfenbrenner's EST provides the core theoretical foundation for this study, positioning children's digital play within nested ecological layers extending from

different microsystems – home and school – and mesosystem connecting these different environments. In addition to this main theoretical framework, this study also benefits from Howard's and McInnes' play typology to investigate how parents and practitioners value digital play, including educational, recreational, and possibly therapeutic aspects. This dataset of this thesis relies on adults' perspectives to understand different dimensions of digital play rather than direct observation of children or their perspectives. These discourses depend on the context. For instance, within the home environment, children's digital play is often considered a recreational activity, whereas in an educational setting, it is mostly framed in terms of its learning value. Consequently, the typology of digital play in this thesis is shaped by the broader ecological system in which digital play occurs.

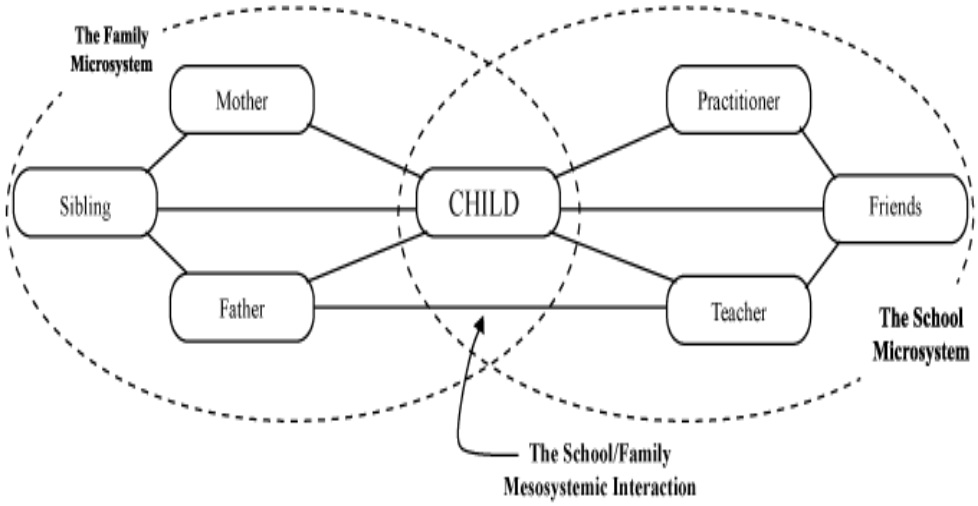


**Figure 2. Reorganized version of Nael's (2016) networked EST model.**

## 3.8. Ethical Considerations

This chapter considers the ethical aspects of my research project. Researchers who involve human participants have a responsibility to ensure that their projects adhere to legal regulations, align with ethical standards, and avoid any breaches (Bell, 2010). Ethical clearance for this research was sought and granted by Swansea University. Moreover, the British Education Research Association (2018) is followed for conducting research involving human subjects, including obtaining informed consent, ensuring participant confidentiality, protecting vulnerable groups, and minimizing potential risks.

### 3.8.1. Participant Consent Form

#### 3.8.1.1. Survey

Participation in the study is voluntary. Participants have the right to be informed about the content and purpose of the study. As for the online survey, which is the first part of the project, information about the purpose and subject of study, as well as details regarding the confidentiality of personal data and data protection was provided in a way that participants can easily read (Participant Information Sheet). After the participant information sheet is prepared in English, it is translated into Turkish by a professional translator before being published.

The individuals who approved to Research Information sheet are allowed to participate in the survey. Participants are also informed that once they consent to participate, their responses will be recorded, and they will not be able to withdraw.

#### 3.8.1.2. Interviews

As for interviews with adults (parents and practitioners), participants' information sheets and participant content forms are prepared in English. They are also translated into Turkish by a professional translator. People who agreed to participate in research are sent a Participant Information Sheet and Participant Content Form. Participant Content forms are signed by both participants and the researcher, and each of them holds one copy.

### 3.8.2. Anonymity

Participants who share information about their thoughts, feelings, and experiences with the researcher have the right to stay anonymous. It is researchers' responsibility to inform participants about their rights, especially since the information they provide will be shared and published.

As for the survey, identifiable information is not shared by participants, and they are informed that their IP address will not be saved when they participate in the survey. However, when it comes to the interview, participants shared their e-mail address, their identities, and their signatures on the Participant Content Form.

### 3.8.3. Right To Withdraw

For the survey, participants are informed that the information they provide will be recorded anonymously, ensuring their responses cannot be linked to their identities.

As for the interview, participants have the right to withdraw the information they provided within a week after the interview. Limiting the right to withdraw data for a week is to protect the researcher from negative consequences since this study needs to be completed within a restricted timeframe. It aims to protect the researcher from unexpected data withdrawals.

### 3.8.4. Potential Risks

BERA (British Educational Research Association) indicates that it is the researcher's responsibility to identify potential risks to participants and position themselves to effectively minimise and handle any distress or discomfort that may emerge (2018). As for this research, participants were asked before the recording began. To make sure they feel comfortable, I asked questions like 'How are you?' 'How do you feel?'. I also told them this is an interview to gain some knowledge about their experience and thoughts, and there is no right or wrong answer to the question. Moreover, they are informed that they could ask me to stop recording at any time, and they could skip any question they do not want to answer.

### 3.8.5. Privacy and Data Protection

All research data should be securely stored, and access should be restricted. This research ensures the privacy of participants and their data by adhering to the ethical guidelines established by Swansea University and the UK GDPR regulations.
In this research, the Zoom application was used to conduct all interviews. The recordings were then automatically saved to a secure platform called OneDrive, included in a group of online software and services made available by Swansea University. OneDrive uses EU-based data centres for data storage and complies with the applicable law regarding data protection. It only allows the researcher to access the recordings and encrypts data to ensure that only authorized parties have access, and all legal requirements are fulfilled.
Such preventive actions help the researcher conform to the standards of confidentiality and integrity which the ethics call for.

### 3.8.6. Representational Ethics and Deficit Discourse

In the interview process, practitioners will be asked questions about children's digital experiences in both school and home settings. Consequently, practitioners may comment about parental practices in their home settings. This carries the potential risk that practitioners may criticise parental approaches, which can be considered as reproducing *deficit discourse* (Davis & Museus, 2019; Goodall, 2021). Goodall (2021) argues that deficit discourse in education characterises parents as lacking and insufficient, considering them as responsible for children's educational challenges rather than wider systemic and institutional influences. Similar to this, a systematic literature review from Patton Davis and Museus (2019) found that scholars describe deficit thinking as a pervasive *"blame the victim orientation"* which contributes to challenges to individuals and families while ignoring the systemic factors that shape inequality (p. 121). Although parents would not be aware of such judgments, researchers should be aware of them to reflect on potential ethical concerns arising from the data. To minimise the risk, the interview questions are designed with awareness of deficit discourse. The interview questions are prepared to understand practitioners' experiences and perspectives on children's digital play experiences at home, rather than leading them to evaluate or

blame parents. Potential criticisms from practitioners of parents will be framed as perceptions rather than objective accounts of parenting practices.

### 3.9. Selected Research Design and Data Collection

Focusing on mixed method design this research consists of three sequential studies. The first part of the research focuses on children's engagement with digital devices, their control over their choices, and potential developmental outcomes from parents' perspective and it represents statistical data. The second and third parts of the research are qualitative data that are incorporated with a process-people-context-time (PPCT) model (Bronfenbrenner, 1979). The qualitative part of the research consists of interviews with parents and practitioners, separately. First, it investigates the children's digital engagement at home, their control over their digital experiences, and potential development outcomes from the perspective of parents representing the home microsystem of Bronfenbrenner's PPCT model. The second element of the qualitative part of the research delves into children's digital engagement in the school environment and potential developmental outcomes from the perspective of practitioners.

The quantitative part of the data is obtained by parents via an online survey on Qualtrics. First, online surveys allow researchers to save time to collect responses and decrease the cost. It also provides access to a large and diverse population (Lefever et al., 2007). Moreover, some scholar indicates that online surveys protect researchers against data loss and potentially more response rates will be obtained (Carbonaro & Bainbridge, 2000; Ilieva et al., 2002). Another advantage of questionnaires is for the participants. They can answer questions in any order; they do not need to complete them at once. They can skip any question they do not like to answer (Aksu, 2009). The survey method is also used in research related to children's digital play. To illustrate, Marsh et al. (2018) conducted a survey study with 2000 parents in the United Kingdom to determine children's access to digital devices and the applications they use. Consequently, they provided statistical data on the applications children encounter. They suggested that these statistics are useful for parents and practitioners to familiarize themselves with the features of the application (Marsh et al., 2018). It is also suggested that their research is useful for app designers to consider the principle of promoting apps for young children

and for policymakers to be beware of children's increasing interest in digital tools (Marsh et al., 2018). However, the reliability and perfectness of online surveys are discussed by some scholars (Lefever et al., 2007) which will be discussed further in the next section. Moreover, the survey data do not give detailed information about the subjects (Creswell, 2015).

The qualitative part of the data will be gained by interviews with parents and practitioners. Interviews are considered one of the most efficient data collection methods in educational research (Aksu, 2009). It is used when researchers aim to gain insight into the participant's perspective by interpreting the significance of the described phenomena (Alamri, 2019). An interview is selected as a method for this research to investigate the perspectives of parents and practitioners. Furthermore, the flexibility characteristics of interviews enable both researchers and participants to delve deeper into the topic to explore ideas or responses in more detail (Alamri, 2019). The interview method is used in much research related to children's play as well. To illustrate, similarly to this research, Sandberg and Pramling-Samuelsson (2005) used a semi-structured interview method to investigate gender differences in the attitudes of preschool teachers' gender toward children's play. They suggested that the interview method enables deeper discussion about the play (Sandberg & Pramling-Samuelsson, 2005). The disadvantage of the interview method is the inability to reach a definitive conclusion about the subject (Creswell, 2015). Moreover, in recorded interviews, participants may not express their feelings freely as they are aware of being recorded (Aksu, 2009).

All the methods used in this study are carefully designed and piloted. Moreover, they are meticulously considered and tested to ensure validity, reliability, and trustworthiness for survey design and interviews. The following section will cover survey and interview designs, data collection strategies, and the data analysis process.

### 3.9.1. Quantitative Element of Research

#### 3.9.1.1. Survey Design

The quantitative element of data is collected by an online survey, which is prepared and published in Qualtrics. The survey was prepared in English. Subsequently, a pilot study was conducted, which will be discussed further in the next section. After finalising the

survey structure and questions, it was translated into Turkish by a professional translator. There were no challenges reported by the translator during the translation process, and the translation was judged to preserve the clarity and intent of the original questions and replies.

The survey begins with the Participant Information Sheet, which contains the data protection policy of Swansea University and related contact information. Following this, there is a text stating that participants contribute to the research entirely voluntarily without using their personal information and IP addresses. After this text, participants are asked whether they approve or disapprove. Only those who approve can continue to participate in the survey.

The survey consists of 12 close-ended questions, including questions that followed a Likert-scale schema and 1 open-ended question that is 'Is there anything you would like to mention?'. If a participant has more than one child, the survey repeats itself to gather data on other child or children.

The survey provided information about

1) the time children spend on various devices, applications, and activities
2) the environments in which they interact with these devices
3) with whom they engaged in these interactions
4) children's decision-making process
5) the potential consequences of recreational and educational engagement with digital devices from a parental perspective.

The questions were aimed at collecting demographic information on children's age and gender. This design of survey facilitated to identification of a hypothesis at this stage of the study, which will be discussed further in this section.

On the one hand, survey questions are designed to provide demographic data. On the other hand, they are prepared to inform the theoretical frameworks that this thesis adopts. Drawing on Bronfenbrenner's EST, several questions are aimed at the context in which children use digital devices and the people who are involved in their engagement, which reflects microsystems and mesosystems. Furthermore, Howard and McInnes's (2013) play classification as educational and recreational has an impact on the structure of some questions that were asked to parents to consider the potential outcomes of

children’s digital play. The survey prepared some questions to distinguish between recreational and educational engagement. To illustrate, the effects of recreational and educational activities were separately asked about by parents in terms of different developmental domains. This theoretical grounding ensured that the survey not only measured frequency and duration of digital engagement but also captured the value judgments parents attached to different forms of digital play.

#### 3.9.1.1.1. Piloting The Survey

The survey was piloted by a group of master's students from the Childhood Development of Swansea University. After receiving some feedback, minor amendments were made concerning the survey flow and sequence of questions in the survey.

#### 3.9.1.1.2. Strategies for Data Collection

To reach out to participants, posts on Facebook and Instagram groups that are related to parents and preschoolers are shared after obtaining permission from the group admins. These included online communities in which parents of preschoolers exchange their advice and experiences, share ideas about play practices at home, including digital activities. Moreover, posts shared on Instagram and Facebook pages where preschool teachers and practitioners give some advice about how to control and improve children's digital experiences. In the content of this post, the researcher is introduced himself. The purpose of the research is explained, and it is emphasized that participants would be anonymous and assured that participants’ personal information would remain anonymous if they chose to participate. Finally, it is mentioned that the study has been ethically approved by Swansea University, Department of the Faculty of Education and Childhood Studies, and the online survey link is provided at the end of the post. The survey is conducted through Qualtrics.

The survey data was collected between 2022 and 2024 through Qualtrics. Collecting data via the internet enabled access to a geographically diverse population of parents. However, recruiting participants through social media platforms results in parents who are digitally connected and active users of social media. This may result in a lack of

information from low-income backgrounds and parents from rural areas who are less familiar with technology and social media. This may lead to the under-representation of parents from lower-income backgrounds and those living in rural areas, who are most likely to have limited access to technology and social media platforms, which can be considered a limitation.

#### 3.9.1.1.3. Participants

The survey was filled out by a total of 188 participants, the result of a 171-sample size, with 32 fathers, 136 mothers, 1 stepfather and 1 stepmother. These participants provided information to 188 children. While the survey provided useful demographic information regarding respondent roles, data were not collected on age range, education level, employment status, or urban–rural distribution. This absence of detail limits the ability to situate the sample socio-demographically and should be considered when interpreting the findings.

### 3.9.1.2. Planned Analysis of Quantitative Data

The data collected from the online survey focuses on children's digital habits and the potential developmental outcomes of digital engagement from a parental perspective. The data collected information on children's gender and age, as well as parents' gender, which allows exploration of patterns of use. First, the data will be categorized to explore the relationship between demographic variables and children's digital habits. The variables will be defined, which are children's age and gender, to understand the relationships between these variables and children's digital experiences.

To statistically explore the relationship between these patterns, a Chi-Square test will be adopted since the Chi-Square test is suitable for categorical variables (Mchugh, 2013). The following relationship will be tested:

R1: The relationship between children's age and their digital habits.

R2: The relationship between children's gender and their digital habits.

#### 3.9.1.3. The Process of Data Analysis

Data entered SPSS for analysis. The data analysis process continues with the consolidation of options in the survey. To illustrate, the time spent by children on digital devices was grouped into two categories: up to 2 hours weekly and 2 hours or more. The purpose of this process is to enhance the probability of carrying out Pearson's Chi-Square for association (Ugoni & Walker, 1995).

To test the hypothesis between children's age and their digital habits, the age of children is categorised into 2 groups: Children aged between 3 and 6, and children are at age of 6 and older.

The stepfather section is combined with the father, and the stepmother section is combined with the mother section since there was only 1 stepfather, and 1 stepmother is participated in the survey.

A chi-square test will be conducted for each relationship to statistically explore the relationship between variables. For variables that showed a significant association in the chi-square tests, Cramer's V was used to measure the strength of relationships between nominal variables, and Gamma was applied to assess the strength and direction of relationships between ordinal variables.

### 3.9.2. Qualitative Element of Research

When research aims to understand people's opinions, feelings, emotions, and experiences, interviews are a suitable method for the researcher. This method provides deeper conversations and understanding of the subject. The researcher has a defined set of issues and questions to cover in semi-structured interviews. However, the researcher is more flexible in terms of asking more questions, allowing the participants the freedom to elaborate on their ideas and discuss a broader range of topics related to those raised by the researcher (Denscombe, 2010).

For this research, the qualitative aspect of information is collected through one-on-one semi-structured interviews with practitioners and parents, separately. Open-ended questions have been selected to explore various aspects of children's recreational and educational engagement with digital devices. The interviews aim to delve into children's engagement with digital devices at home and school, aspects of children's autonomy,

decision-making processes, and parents' control and autonomy concerning children's digital engagement. Moreover, the interviews seek insight into potential development and learning outcomes associated with children's digital engagement from the perspective of practitioners and parents.

#### 3.9.2.1. Interview Development and Piloting

Smith, Harre, and van Langehove (1995) expressed some recommendations for designing an interview as follows;

-Begin by analysing the general subject to be explored in the interview and the broad range of themes to be covered.

-Organise various aspects of the topic in a logical order, placing more in-depth questions towards the middle of an interview. This helps the interviewee to the subject and fosters relaxation and comfort.

-Create prompts and probes that can be utilized to delve deeper into certain responses, allowing a more thorough exploration of the answers.

All these 3 tips are considered while developing interview questions. The interview started with questions like 'How are you doing, today?' 'How is your day going so far?' to make them relaxed. Moreover, 1-2 starter questions are prepared from the broadest range about children's digital engagement. Furthermore, critical questions are asked in the middle of the interview. The questions are attempted to be asked in order; however, due to the structure of semi-structured interviews, the order may not always be followed depending on the interviewee's narrative.

Moreover, Smith et al. (1995) indicated some tips while processing interviews. A researcher needs to make sure that a respondent tells everything they want before asking the next question. They may ask one question at once. If the interviewee touches upon an interesting topic, the researcher should ask questions that encourage the participant to share deeper thoughts or experiences about the subject (Smith et al., 1995). The guidance of Smith will be adopted in the interview process.

The semi-structured interview is designed to explore key themes relevant to research questions, including children's digital play at home and early year settings from practitioners' and parents' perspectives, parental mediation strategies at home, children's

autonomy and decision-making process at home and in preschool settings, and potential learning and developmental outcomes from the eyes of practitioners and parents. Moreover, questions are prepared to lead participants to reflect on the challenges they face and the potential benefits of children's digital play in their daily lives, including home and school environments. The full list of semi-structured interview questions is provided in Appendix G and H.

The interview questions were developed on the basis of the study's theoretical frameworks. Bronfenbrenner's EST informed the focus on different contexts of digital play, employing questions that encouraged parents to explain digital practices at home and practitioners to describe both home and school activities. The questions are also designed to explore multiple contexts and their effects on each other, represented in EST as microsystems and mesosystems. Moreover, Howard and McInnes's play typology is used to capture how practitioners and parents value play in the digital world. The questions are designed to understand parents' and practitioners' perspectives on different dimensions of play in the digital world: recreational, educational and potentially therapeutic. Moreover, interview questions are prepared to investigate the potential learning and development outcomes of different dimensions of play in different environments. By incorporating both of these theoretical perspectives, the interviews yielded qualitative data which is suitable for both inductive analysis and interpretation through the lenses of Bronfenbrenner's EST and play typology by Howard and McInnes (2013).

#### 3.9.2.1.1. Sampling Participants

Two different participant groups are selected for this part of the research: preschool practitioners and parents of children aged between 3 and 5 in Türkiye.12 Turkish preschool practitioners, who agreed to participate, were interviewed to investigate children's digital engagement at school from the practitioners' perspective. 11 Turkish parents, who agreed to participate, were interviewed to investigate children's digital engagement at home and parents' perspectives.

Although the roles of participants were recorded, demographic details, such as the age of participants, their educational level and whether they live in rural or urban areas, were

not systematically collected. This absence of demographic information of participants limits the ability to contextualise the sample demographically.

#### 3.9.2.1.2. Data Collection Process

Social media platforms, including Facebook and Instagram, were used as a means of contacting potential participants for the research. This involved reaching out to the administrators of groups related to preschool children, parents, and preschool practitioners. For the recruitment of parent participants, posts were shared on Facebook and Instagram groups where families of young children exchange ideas on children's digital engagement at home and share activities for home digital play practices. As for practitioners' recruitment, online communities in which early-year practitioners share resources, propose digital activities, and debate on how digital technologies can be integrated into preschool education were used. Once approval to advertise the study was granted by the administrators, an informative post was developed, inviting participants to take part in the research. In the content of this post, the researcher introduced himself first. Moreover, the research purpose is explained, emphasizing that participant will remain anonymous, and assuring them that their personal information will be kept confidential if they choose to participate. Finally, it is mentioned that the study has been ethically approved by Swansea University, department of Faculty of Education and Childhood Studies.

For those who were interested in participating in the study, it is indicated that they could contact me via e-mail. Both the researcher's contact information and the contact information of the supervisor are provided if they would like to ask something. Contact information includes full name and school e-mail address. After receiving emails from the teachers and participants who agreed to participate in the research, the Participant Information Sheet (PIS) was signed by researchers and both parents and teachers. Zoom meetings were scheduled based on participants' availability. Moreover, all interviews were conducted via Zoom using the researcher's university e-mail address and those are automatically recorded on the Cloud address. Before starting to record interviews, participants are verbally asked if they agree to be recorded, even though they have already agreed to be recorded on PIS.

Furthermore, a single interview was conducted with each participant, which lasted around 30 to 60 minutes, depending on the depth of their responses. All the interviews were conducted individually to encourage openness and to ensure that each participant had the opportunity to fully express their perspectives.

#### 3.9.2.1.2.1. Translation Process

The interview questions were first prepared in English and shared with supervisors to obtain feedback. It was then translated into Turkish by a professional translator and proofread by the researcher. After collecting data in Turkish, it was translated into English by the same translator and proofread by the researcher. Throughout this process, neither the researcher nor the translator encountered any difficulties with the meaning. Although the translation was translated by a professional translator and proofread, some nuances of meaning in the translation version may not have been fully recovered. However, to minimise risk, the data is combined with the inductive coding approach and a theoretical framework.

#### 3.9.2.1.3. Piloting Interview

There are several reasons for conducting a pilot study. Specifically, for this research, a pilot study is conducted 1) to create and validate the effectiveness of research tools, 2) to evaluate the practicality and viability of conducting a comprehensive study, 3) to decide whether research protocol is realistic and workable, 4) to predict the range of outcomes variability to aid in determining the appropriate sample size (van Teijlingen & Hundley, 2001).

The interview was piloted with 2 different people to enhance the validity and reliability of the interview questions. One of these people is a practitioner at a pre-school in Türkiye, and the other one is a parent of pre-school children in Türkiye. They are asked if they are willing to interview with the researcher and informed about the subject of the interview. After they agreed to participate in the pilot study, the previously prepared interview questions were asked. After the interviews, they are asked to give feedback about the questions and the interview in general. Regarding their feedback, ‘Is there

anything you would like to add?' question is added at the end of the interview to allow them the freedom to express themselves beyond the questions you asked.

#### 3.9.2.2. Interview Analysis Method

The qualitative information gathered from semi-structured interviews with parents and practitioners about children's recreational and educational engagement with digital devices, children's control and autonomy, and their potential impact on children's learning and development.

The reflexive thematic analysis is used as a data analysis method. Braun and Clarke (2006) outlined six phases of thematic analysis applied in this research as follows:

**Phase 1: Familiarising Yourself with Your Data**

This phase began with the transcription of the data, which is in the form of an audio/video recording stored in my university account's cloud. The audio recordings are listened to multiple times to ensure that the transcription is accurate and complete. Moreover, it is cross-checked by reading the transcripts while listening to recordings. After ensuring that the transcriptions are correct and complete, the written form of data is forwarded to a professional translator. The interviews were translated from Turkish to English by the translator, and the data-sharing process adhered to the data management regulations of Swansea University.

Transcribing the data on my own has offered numerous advantages. It is not only to ensure 'accuracy', but also to find myself becoming more familiar with data by reading and listening to it several times, which is the main aim of this phase. Moreover, in this process, potential meanings, patterns, and codes are considered by actively rereading the data.

Another reason to get familiar with the data is to investigate the deeper or implicit layers of meaning, as it is suggested by Braun and Clarke (2022).

**Phase 2: Generating Initial Codes**

After becoming familiar with the data set, the coding process begins in this phase. During this phase, all data relevant to the research questions and objectives is coded by reviewing the entire dataset. Transcribed data is uploaded to a data analysis application called NVivo.

As it was my first time using the thematic analysis method, a randomly selected interview was forwarded to my supervisor. The initial coding process is conducted independently and then compared to the initial codes. Despite some minor differences between the codes, they were relatively close. Although qualitative data analysis is an individual process, approaching it collaboratively allows researchers to improve the accuracy of the study.

Following collaborative work with my supervisor, the entire dataset is systematically processed, and initial codes are created.

**Phase 3: Searching for Themes**

At this stage, the codes are marked with different colour through the NVivo application based on their similarities and relationships. After examining the connection between codes, the data is considered from a broader perspective, and potential themes and subthemes are created by combining the codes.

**Phase 4: Reviewing Themes**

In this stage, the relationship between themes is evaluated. In detail, while some potential themes and subthemes merged to form a single theme, it became clear that some potential themes were not actual themes due to insufficient data. Braun and Clarke suggested that *"Data within themes should cohere together meaningfully, while there should be clear and identifiable distinctions between themes."* (2006, p. 91). The relationship between subthemes and themes is considered while reviewing and refining them. These considerations are revisited several times to make sure everything is clear. At the end of this stage, a thematic map is prepared to clearly understand what the different themes are and what they tell us about overall data.

To strengthen the accuracy of the analysis before going forward next phase, the list of the codes is shared with my supervisors. They have also individually created potential themes and subthemes according to the list of codes they are given. In one of our meetings, we compared our thematic maps to each other to see if they were significantly different from each other or not. However, we decided that there were only minor differences between them and concluded that this is quite normal for qualitative data.

**Phase 5: Defining and Naming Themes**

At this stage, we are now 'defining' and 'refining' the themes we have, along with sub-themes if present. It is necessary to identify the 'essence' of each theme and understand what aspects of the research each theme captures overall (Braun & Clarke, 2006).
In this section, a 'story' for each theme that will be reported individually is considered. Moreover, the relationship between each theme with other themes and how an overall narrative will be constructed are planned.
Finally, a table has been created for each theme to allow readers to see the overall narrative of each theme. The table of three segments for each theme: 1) all the subthemes contained in the team, 2) the codes list that belongs to the subthemes 3) a quote sentence related to that subtheme.

**Phase 6: Producing the Report**

When a well-established set of themes is set and the ultimate analysis and documentation in the report are encompassed, the last phase starts.
Braun and Clarke indicated that the thematic report should be as follows (2006, p. 93):
*…is to tell the complicated story of your data in a way which convinces the reader of the merit and validity of your analysis. It is important that the analysis (the write-up of it, including data extracts) provides a concise, coherent, logical, nonrepetitive, and interesting account of the story the data tell – within and across themes.*

Although thematic analysis is described as a six-phased process, it is a reflective, iterative process that evolves over time and continually switches between phases (Nowell et al., 2017). This study also experienced that as well, with much back-and-forth between these phases several times.
Moreover, while the coding process was largely inductive, it was also informed by theoretical frameworks of the thesis. Bronfenbrenner's EST guided the researcher in examining contextual differences in digital play by not only comparing the home and school microsystems but also investigating the interaction between those environments (mesosystem). The complementary framework, Howard and McInnes's (2013) play typology, also supported the analysis of discourses, which is adopted to categorise digital play as recreational, educational and possibly therapeutic. In this way, while analysis remained thematically and grounded in participants' perspectives, it is also interpreted through the theoretical frameworks established for the study.

### 3.10. Research Map and Conclusion

Starting from research questions and aims, this chapter of research examined the philosophical and epistemological approach taken in this research and how the sequential mixed method approach is applied to this research as outlined in the table below.

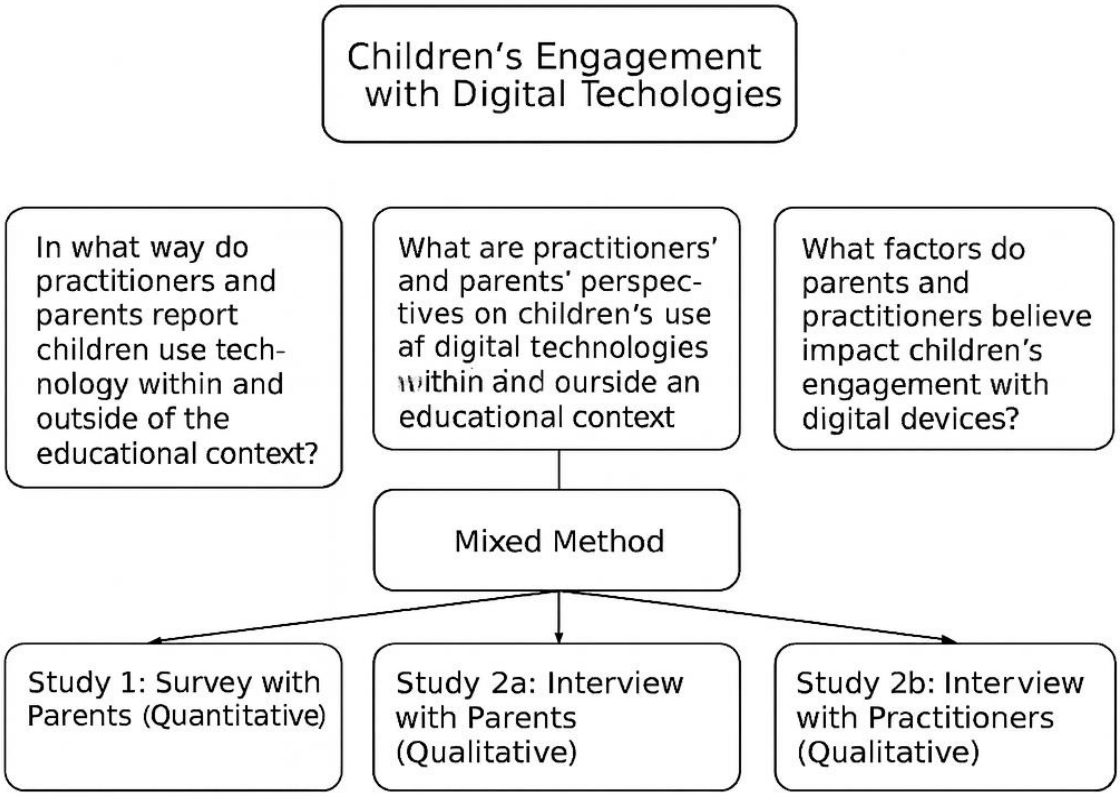


**Figure 3: Research Map**

Furthermore, the advantages and disadvantages of quantitative and qualitative research were discussed. Moreover, the use of sequential mixed-method approaches was

explained. While the first quantitative part of the research gives statistical information with a large portion of participants about the subject, the qualitative part of the study will investigate detailed information about the same subject. The reason for adopting the mixed method is to overcome both the weaknesses of qualitative and quantitative methods.

Moreover, critical realism as a philosophical approach, Bronfenbrenner's ecological environment theory, and the PPCT model were discussed. Discussing the pros and cons of these theories and models for choosing them for this study was also explained. The advantages and disadvantages of the survey and interview data collection method and their applications in previous works related to children's digital play were also discussed. Lastly, the process of data collection and how the data is going to be analysed is explored. Thematic analysis focused on identifying patterns in how digital play was described, valued, and justified by parents and practitioners across different contexts. The next chapter will represent the findings of this study.

# CHAPTER 4 FINDINGS

## 4.1. Introduction

This chapter employs a mixed-methods approach to examine children's digital engagement, utilising both quantitative and qualitative techniques. In the quantitative section, demographic influences on digital habits are highlighted, along with trends and patterns about the age and gender of children as well as the gender of parents to learn about their perspectives on the learning and developmental effects of digital engagement. On the other hand, the qualitative section offers more detailed accounts of parents' and practitioners' experiences, highlighting recreational and educational engagement, time and content management, autonomy and control and potential developmental and learning outcomes. Combining these methods yields complex narratives that blend personal accounts with statistical information to produce a nuanced understanding of how children utilise digital devices.

The demonstration of findings is also interpreted through the theoretical frameworks of the thesis. Bronfenbrenner's EST emphasises the contextual settings of both parents and practitioners, focusing on home and school settings and the interactions between those settings. As a second theoretical framework, play categorisation by Howard and McInnes (2013) provides an analytical lens for categorising children's digital interactions in these different environments, whether they are defined as recreational, educational, or therapeutic. By combining parents' and practitioners' perspectives, these findings foreground how adult interpretations, cultural expectations, and contextual conditions shape the meanings attributed to children's educational and recreational engagement with digital devices in early childhood in Türkiye.

## 4.2. Quantitative Findings

This section represents the quantitative analysis of the research, delving into relationships between children's digital habits and demographic factors through parents' eyes. The findings illustrate how demographic variables, including children's gender and age, influence children's digital engagement. The analysis provides valuable insights into

children's digital habit patterns and potential developmental outcomes from a parental perspective.

### 4.2.1. Parents' Demographics

Most of the respondents were parents, with 72% of mothers (n = 139) and 17% of fathers (n = 34), and a smaller portion of stepparents, caregivers and others. To simplify the analysis, stepmother and stepfather were grouped into fathers and mothers, respectively. The sections "caregivers" and "others" were excluded because of the small portion and lack of direct relevance to the aim of the study.

### 4.2.2. Children's Demographics

The survey analysis found that the gender distribution of children was almost even, with nearly 50% of girls (n = 95) and 50% of boys (n = 92). Considering their age, children's ages were categorised into three groups to clarify and align with research objectives:

1- 15% of 0-3 years old (n = 27),
2- 61% of 3-6 years old (n = 115) and
3- 24% of 6+ years old (n = 46)

These categorisations provided a clear and structured framework to analyse children's digital habits from a demographic perspective, particularly concerning their developmental stages and school-age groups: 0–3 years (no school), 3–6 years (preschool), and 6+ years (primary school). However, due to the small proportion of data for the 0–3 age group, the analysis primarily compared the 3–6 and 6+ age groups.

### 4.2.3. Hypothesis

The demographic data provide a foundational context for testing the following hypotheses:
H1: There is a relationship between children's age and their digital habits.
H2: There is a relationship between children's gender and their digital habits.
The chi-square test was used to examine whether the associations between ordinal-nominal (H1) and nominal-nominal (H2) variables were statistically significant.

Cramer's V was used to measure the strength of the relationship between two nominal variables, and the Gamma test was applied to evaluate the strength and direction of the association between ordinal and nominal variables.

According to Cramer's V, a value up to 0.2 indicates a small effect, 0.3 represents a medium effect, and 0.5 or above suggests a large effect (see King & Newstead, 2021). As for the Gamma test effect size up to 0.3 is weak, between 0.31 and 0.60 is medium, and more than 0.6 shows a strong association.

Moreover, post-hoc adjusted residual analysis was performed to identify specific cells contributing most significantly to the chi-squared result. It represents the difference between observed and expected values for a cell, with values above 2.0 or below −2.0 indicating a strong contribution to the relationship (Sharpe, 2015).

The next section will demonstrate the statistical analysis of the relationship between children's digital habits and their age, as well as their gender. It will also examine the relationship between parents' gender and their thoughts on the potential developmental outcomes of digital engagement.

#### 4.2.3.1. Children's Age and Their Digital Habits

The statistical analysis found 3 dependent variables that are children's age and time spent with computers, children's age and time spent on reading/writing apps, and children's age and reading as an activity.

**Table 1. The weekly hours children spend using computers**

| | | | None | Less than 2 hours | 2 hours or more |
|---|---|---|---|---|---|
| Age | 3-6 | Count | 78 | 13 | 8 |
| | | Expected Count | 71,8 | 16,6 | 10,6 |
| | | Adjusted Residual | 2,8 | -2,0 | -1,7 |
| | 6+ | Count | 17 | 9 | 6 |
| | | Expected Count | 23,2 | 5,4 | 3,4 |
| | | Adjusted Residual | -2,8 | 2,0 | 1,7 |

Table 1 shows the weekly computer usage time for children aged 3 to 6 and 6 years old or older. Although one observed count is less than 5 (specifically, 6 years and older spending more than 2 hours per week on computer), this is 16.7% which is less than 20% so it does not violate the rules of Chi-Square analysis.

There is a significant relationship between children's age and the time spent with computers weekly $x^2(2, N=131) = 8{,}009$, p (0.018) <0,050. According to post-hoc analysis, children who have no weekly computer usage are significantly more likely those aged between 3 and 6 years (adjusted residue 2.8) and less likely to be aged 6 or older (adjusted residual -2.8). Furthermore, children who spend less than 2 hours weekly on computers are significantly less likely to be those aged between 3 and 6 (adjusted residual 2), and more likely to be those aged 6 or older (adjusted residual -2). The Gamma value is 0,488 which means there is a positive moderate association between the child's age and time spent using a computer [p (0,012) <0,050].

**Table 2. The weekly hours children spend on Reading/Writing Application**

| | | | None | Less than 2 hours | 2 hours or more |
|---|---|---|---|---|---|
| Age | 3-6 | Count | 49 | 42 | 8 |
| | | Expected Count | 42,2 | 46,6 | 10,2 |
| | | Adjusted Residual | 2,6 | -1,8 | -1,4 |
| | 6+ | Count | 9 | 22 | 6 |
| | | Expected Count | 15,8 | 17,4 | 3,8 |
| | | Adjusted Residual | -2,6 | 1,8 | 1,4 |

Table 2 shows the weekly reading/writing applications usage time for children aged 3 to 6 and 6 years and older. Although one observed count is less than 5 (specifically, 6 years

and older spending more than 2 hours per week in reading/writing applications), this is 16.7% which is less than 20% so it does not violate the rules of Chi-Square analysis. There is a significant relationship between children's age and the time spent with reading/writing apps weekly $x^2(2, N=136) = 7,394$, p (0.025) <0,050. Post-hoc analysis indicates that children who do not engage weekly with reading/writing apps are significantly more likely to be those aged between 3 and 6 years (adjusted residual 2.6) and less likely to be those aged 6 or older (adjusted residual -2.6). The Gamma test value is 0,444 which means there is a moderate positive association between the child's age and time spent with technology on reading/writing apps [p (0,005) <0,050].

**Table 3. The weekly hours children spend time with technology to read**

| | | | None | Less than 2 hours | 2 hours or more |
|---|---|---|---|---|---|
| Age | 3-6 | Count | 66 | 23 | 5 |
| | | Expected Count | 58,5 | 28,1 | 7,4 |
| | | Adjusted Residual | 3,1 | -2,3 | -1,8 |
| | 6+ | Count | 13 | 15 | 5 |
| | | Expected Count | 20,5 | 9,9 | 2,6 |
| | | Adjusted Residual | -3,1 | 2,3 | 1,8 |

Table 3 shows the weekly technology usage time to read for children aged 3 to 6 and 6 years and older. Although one observed count is less than 5 (specifically, 6 years and older spending more than 2 hours with technological devices per week to read), this is 16.7% which is less than 20% so it does not violate the rules of Chi-Square analysis. There is a significant relationship between children's age and the time spent with computers weekly $x^2(2, N=127) = 10,324$, p (0.006) <0,050. According to the post-hoc analysis, children who do not engage in weekly reading activities are significantly more likely to be those aged between 3 and 6 years (adjusted residual 3.1) and significantly less likely to be at the age of 6 or older (adjusted residual -3.1). Moreover, children who

spend less than 2 hours on digital activities to read are significantly less likely to be those aged between 3 and 6 (adjusted residual -2.3) and significantly more likely to be those aged 6 or older (adjusted residual 2.3). The Gamma test value is 0,531 which means there is a positive moderate association between the child's age and time spent with technology in order to read [p (0,002) <0,050].

#### 4.2.3.2. Children's Gender and Their Digital Habits

The statistical analysis found 6 dependent variables about children's gender and the following variables.

1- Time spent watching TV
2- Time spent playing games
3- Time spent drawing something
4- Frequency of using technology outside
5- Frequency of using technology in bed
6- Frequency of using technology with a friend(s)

**Table 4. The weekly hours children spend watching TV**

| | | | None | Less than 2 hours | More than 2 hours |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 10 | 40 | 40 |
| | | Expected Count | 11,1 | 32,1 | 46,8 |
| | | Adjusted Residual | -,5 | 2,5 | -2,1 |
| | Boy | Count | 11 | 21 | 49 |
| | | Expected Count | 9,9 | 28,9 | 42,2 |
| | | Adjusted Residual | ,5 | -2,5 | 2,1 |

Table 4 demonstrates the frequency of children spending time watching TV weekly, categorised by their gender. According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children's age and the frequency children spend time with technology. $x^2(2, N=171) = 6,420$, p (0.040) <0,050. According to the post-hoc analysis, children who spend less than 2 hours weekly watching TV are significantly more likely to be girls (adjusted residual 2.5) and less likely to be boys (adjusted residual 2.5). Moreover, those who spend 2 hours or more watching TV weekly are significantly more likely to be boys (adjustment residual 2.1) and less likely to be girls (adjustment residual -2.1). The Cramer's V test is 0.194 which means there is a weak association between the child's gender and the frequency of children spending time watching TV [p (0,040) <0,050].

**Table 5. Children spend time with technology to play games weekly**

| | | | None | Less Than 2 hours | 2 hours or more |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 16 | 40 | 26 |
| | | Expected Count | 14,4 | 33,5 | 34,0 |
| | | Adjusted Residual | ,6 | 2,1 | -2,6 |
| | Boy | Count | 12 | 25 | 40 |
| | | Expected Count | 13,6 | 31,5 | 32,0 |
| | | Adjusted Residual | -,6 | -2,1 | 2,6 |

Table 5 shows boys and girls spending time with technology to play games weekly. According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children's gender and the frequency children spend time with technology. $x^2(2, N=159) = 6,852$, p (0.033) <0,050. According to the post-hoc analysis, children who spend less than 2 hours weekly with technology to play

games are significantly more likely to be girls (adjusted residual 2.1) and less likely to be boys (adjusted residual -2.1). Moreover, children who spend 2 hours or more weekly with technology to play games are significantly less likely to be girls (adjusted residual -2.6) and most likely to be boys (adjusted residual 2.6). The Cramer's V test is 0.208 which means there is a weak association between the child's gender and the frequency of children spending time with technology to play games [p (0,033) <0,050].

**Table 6. Children spend time with technology to draw something**

| | | | None | Less than 2 hours | 2 hours or more |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 19 | 46 | 15 |
| | | Expected Count | 26,8 | 40,8 | 12,4 |
| | | Adjusted Residual | -2,7 | 1,7 | 1,2 |
| | Boy | Count | 33 | 33 | 9 |
| | | Expected Count | 25,2 | 38,2 | 11,6 |
| | | Adjusted Residual | 2,7 | -1,7 | -1,2 |

Table 6 shows boys and girls spending time with technology to draw something weekly. According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children's gender and the frequency children spend time with technology to draw something. $x^2(2, N=155) = 7,255$, p (0.027) <0,050. According to the post-hoc analysis, children who do not spend any time using technological devices to draw something are significantly less likely to be girls (adjusted residual -2.7), and more likely to be boys (adjusted residual 2.7). The Cramer's V test is 0.216 which means there is a weak association between the child's gender and the frequency of children spending time drawing something [p (0,027) <0,050].

**Table 7. Frequency of Children spending time with technology outside**

| | | | Rarely | Moderately Often | Often |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 69 | 3 | 7 |
| | | Expected Count | 64,3 | 7,9 | 6,8 |
| | | Adjusted Residual | 2,0 | -2,7 | ,1 |
| | Boy | Count | 53 | 12 | 6 |
| | | Expected Count | 57,7 | 7,1 | 6,2 |
| | | Adjusted Residual | -2,0 | 2,7 | -,1 |

Table 7 shows the frequency of children spending time with technology outside, categorising them as “Rarely,” “Moderately Often,” and “Often.” According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children’s gender and the frequency children spend time with technology outside $x^2(2, N=150) = 7,169$, p (0.028) <0,050. According to the post-hoc analysis, children who “rarely” engage with technological devices outside are significantly more likely to be girls (adjusted residual 2) and less likely to be boys (adjusted residual -2). Moreover, children who “moderately often” engage in technological devices outside are significantly less likely to be girls (adjusted residual -2.7), and more likely to be boys (adjusted residual 2.7). The Cramer’s V test is 0.219, which means there is a weak association between the child’s gender and the frequency of children spending time with technology outside [p (0,028) <0,050].

**Table 8. Frequency of Children spending time with technology in bed**

| | | | Rarely | Moderately Often | Often |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 52 | 20 | 6 |
| | | Expected Count | 58,1 | 12,6 | 7,3 |
| | | Adjusted Residual | -2,3 | 3,3 | -,7 |
| | Boy | Count | 59 | 4 | 8 |
| | | Expected Count | 52,9 | 11,4 | 6,7 |
| | | Adjusted Residual | 2,3 | -3,3 | ,7 |

Table 8 demonstrates the frequency of boys and girls spending time with technology in bed, categorising them as “Rarely,” “Moderately Often,” and “Often.” According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children’s gender and the frequency children spend time with technology in bed $x^2(2, N=149) = 11,089$, $p < (0.004) <0,050$.

According to the post-hoc analysis, children who “rarely” engage with technological devices in bed are significantly less likely to be girls (adjusted residual -2.3), and more likely to be boys (adjusted residual 2.3). Furthermore, children who “moderately often” engage in technological devices at home are significantly more likely to be girls (adjusted residual 3.3), and less likely to be boys (adjusted residual -3.3). The Cramer’s V test is 0.273, which means there is a moderate association between the child’s gender and the frequency of children spending time with technology in bed [p (0,004) <0,050].

**Table 9. Frequency of Children spending time with technology with friend(s)**

| | | | Rarely | Moderately Often | Often |
|---|---|---|---|---|---|
| Child Gender | Girl | Count | 56 | 9 | 5 |
| | | Expected Count | 48,7 | 13,0 | 8,3 |
| | | Adjusted Residual | 2,7 | -1,8 | -1,8 |
| | Boy | Count | 38 | 16 | 11 |
| | | Expected Count | 45,3 | 12,0 | 7,7 |
| | | Adjusted Residual | -2,7 | 1,8 | 1,8 |

Table 9 displays the frequency of boys and girls spending time with technology with a friend(s), categorising them as "Rarely," "Moderately Often," and "Often." According to Chi-Square analysis, there are no cells in the table where the expected count is less than 5 per cent.

There is a significant relationship between children's gender and the frequency children spend time with technology with a friend(s) $x^2(2, N=135) = 7,482$, p (0.024) <0,050. According to the post-hoc analysis, children who "rarely" engage with technological devices with a friend(s) are significantly more likely to be girls (adjusted residual 2.7), and less likely to be boys (adjusted residual -2.7). The Cramer's V test is 0.235, which means there is a weak association between the child's gender and the frequency of children spending time with technology with a friend(s) [p (0,024) <0,050].

To sum up, children aged more than 6 moderately spend more time using computers, reading/writing apps and engage more in reading as an activity. Considering children's gender, boys spend watching TV than girls. While boys spend more time playing video games, girls are more likely to engage in drawing apps. Interestingly, boys more frequently use digital devices outside, whereas girls are more likely to use them in their beds. Furthermore, the statistics demonstrated that boys frequently use technological devices with their friends compared to girls.

This section provided statistical information about demographic perspectives of children's digital engagement and its potential outcomes from the parental perspective.

The next section will delve into personal experiences of practitioners and parents about children's digital engagement and its potential outcomes.

### 4.3. Qualitative Data

This chapter provides valuable insight into qualitative dimensions of children's digital engagement, investigating types of engagement, autonomy and control, and potential developmental outcomes from the parents' perspective. It delves into children's educational and recreational experiences, the process of autonomy and decision-making, engagement type and time management, and potential learning and developmental outcomes from parents' and practitioners' experiences separately. The thematic analysis demonstrates the diverse opportunities technology provides while shaping children's digital experiences.

The qualitative findings account for the parents' and practitioners' perspectives, which will be represented further. Analysing parents' and practitioners' accounts side by side makes visible not only shared concerns but also points of tension in how digital play is valued, regulated, and justified across home and school contexts. This allows for a clearer understanding of both similarities and differences between parents' and practitioners' perspectives.

#### 4.3.1. Parents' Perspective

**Thematic Map and Themes**

The figure below demonstrates the themes from parent interviews. All these themes and subthemes will be represented in this chapter.

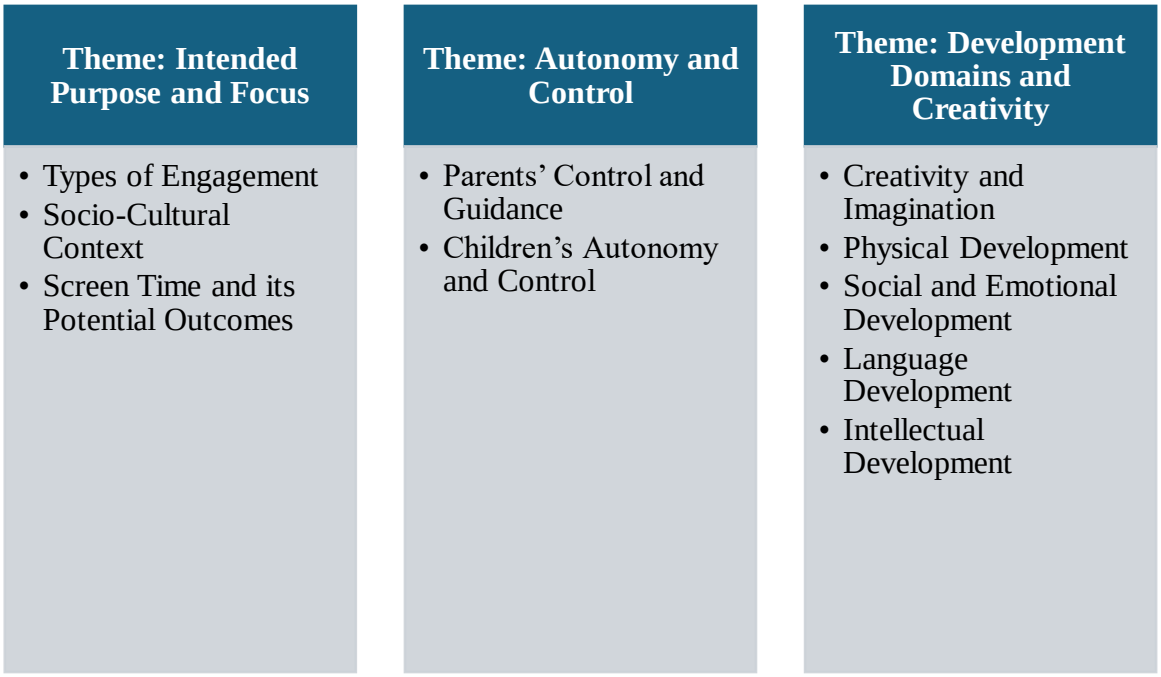


**Figure 4. Thematic Map of Parents**

**Theme: Intended Purpose and Focus**

| Theme: Intended Purpose and Focus | | |
|---|---|---|
| **SUBTHEMES** | **CODES** | **EXAMPLE** |
| Types of Engagement | -Intended Purpose<br><br>-Recreational and Educational Engagement<br><br>-Device Diversity | …he uses educational applications. He plays games that aim to teach numbers, letters, and shapes. |
| Socio-Cultural Context | -Technology and Culture<br><br>-Parent-Child Interaction | …Some cartoons emphasize moral values and address our cultural traditions… |
| Screen Time and its Potential Outcomes | -Spending too much time and its potential effects<br><br>-Coronavirus Effect<br>Life without technology<br><br>-Engagement time | If they spend a lot of time with technology, negative effects overwhelm positive ones. |

Figure 5. Parent Theme: Intended Purpose and Focus

In the contemporary digital era, children's engagement with digital devices has become an integral component of their daily lives. Drawing insights from parental perspectives allows us to delve into the multifaceted implications of such engagements. Through rigorous dialogue with parents, three predominant subthemes have emerged: the diverse nature of digital activities (Types of Engagement), children-parent interaction and cultural nuances (Socio-Cultural Context), and the implications of the duration of digital exposure (Screen Time and its Potential Impact), respectively. This exploration is pivotal in understanding the delicate balance parents seek to maintain as they guide their children through the digital realm.

**Subtheme Types of Engagement**

Parents indicated that children have access to many different devices in their home settings. They mentioned children engage with different types of technological devices from TVs to tablets and smartphones. From traditional forms of technology to modern forms of it.

One of the parents marked that his child is learning a foreign language from a digital toy by having fun. Another parent indicated that he encouraged his child to use a computer since he wants her to learn how to use the keyboard and mouse.

*P10: "I want her to learn how to use a mouse and keyboard."*

Devices like tablets and smartphones are prominent in children's technological engagement, as indicated by multiple parents. According to parents, tablets and smartphones attract children the most and they are the primary devices of use. These handheld devices offer a portable and interactive platform for a variety of activities. They indicated that children interact with a variety of technological activities related to those devices. According to parents, children engage in educational and recreational activities both in their home and school settings.

The narratives provided by parents shed light on the significant role of technological devices in enhancing educational engagement within the school and nursery environment.

Many parents believed that educational engagement with digital devices in educational environments was beneficial for their children, and some suggested it may positively affect their learning and development. Moreover, most of the parents reported that their children use digital devices at school or nursery for educational purposes.

Parents' accounts highlight that the diversity of devices and activities contributes, in their view, to preschool education. Even if children do not directly interact with these devices, the variety of activities parents mentioned becomes evident. To illustrate, a parent talked about a rhythm activity of their child in a video taken at school.

*P9: "The teacher not only played music during a rhythm activity but also displayed dance figures on the smart boards so that children* could *imitate the figures in the visuals."*

These examples vividly illustrate how technology can be used to create interactive

learning experiences for children by enabling them to imitate and engage with visual content. It provides evidence of how technology can be utilized within physical activities. Moreover, the accounts from parents offer a comprehensive perspective on how technology contributes to educational involvement within the school setting. The collective stories and viewpoints underscore the capacity of technology to magnify interactive learning, improve inclusivity, and foster favourable educational outcomes.

Parents mentioned their children engage in different educational applications and activities at home as well. Parents indicated that their children play different types of educational games at home.

Puzzles, drawing, and painting activities were the most frequently mentioned educational activities by parents. Moreover, they claimed that virtual puzzles attract them more compared to traditional puzzle books since they are shinier and more colourful.

*P7: "... virtual puzzles and virtual matching games attract her more than real ones as they are shinier and more colourful."*

Furthermore, mathematical, and matching activities are preferred by parents when it comes to children's educational engagement with digital devices at home. Apart from educational games, participants mentioned that they direct their children towards watching educational videos since the child enjoys watching videos. Moreover, it can be understood that parents aim to teach specific skills to their children, such as personal care skills, by utilizing the child's love for using digital devices.

*P1: "I try to play educational videos as he likes to watch videos. For example, videos about self-care, how to brush your teeth, and how to tidy your room."*

Parents framed this as a strategic alignment between technology use and educational content, allowing children to learn self-care skills while indulging in their preferences.

Parents' accounts provided insight into the various recreational activities that children engage in using technological devices in their home environment.

Watching cartoons and children's programs emerges as one of the common recreational activities on TV. Parents noted that their children enjoy content from sources like TRT Cocuk (a TV channel).

YouTube serves as another platform for children's entertainment. Parents mentioned videos about children playing in parks or eating, showcasing the variety of content available on the platform.

*P7: Moreover, she watches videos on YouTube. We watch videos about parents recording their children in parks or eating videos on YouTube.*

According to parents, playing games is another recreational engagement children participate in. While some parents mentioned their children playing action games, another one indicated that they play detective games in which different options can be chosen by the players.

The diversity of games offered by digital devices provides children with the opportunity to experience various encounters. Moreover, having different options to choose from and seeing the results of their choices may help children understand the concept of cause and effect.

However, it is worth noting that not all parents emphasized playing games as a predominantly recreational activity. One of the parents shared that their child does not play a game or engage in educational activities. They use digital devices only to watch cartoons.

Although playing games and watching videos are the most preferred recreational engagements children encounter, different types of activities are mentioned by parents like photoshopping, listening to music and taking a selfie.

Parents' insights into recreational engagements emphasize the array of activities children encounter in using different technological devices. From watching cartoons and videos to playing different types of games and engaging in creative endeavours, these devices offer a dynamic range of recreational experiences that reflect individual interests and preferences.

In terms of the variety of activities they offer for children and the learning opportunities they provide educational and recreational activities demonstrate similarities. However, differences are also reported by parents. While some of the parents reported that their children engage in only recreational activities with digital devices, others prohibited recreational activities since they believe that recreational activities are harmful to their

children. Furthermore, parents distinguish between recreational and educational engagement.

*P3: While educational activities aim to improve or acquire the specific skill(s), recreational activities are to have fun.*

One parent highlighted what they saw as the fundamental difference between the goals of these activities. According to this parent, educational activities are designed with specific skill development in mind, while recreational activities primarily focus on enjoyment and leisure. This distinction also corresponds to the recreational and educational categories in Howard and McInnes's (2013) play typology. It also underscores that, within the home microsystem, parents largely consider digital play to be recreational. However, they recognise its educational value when digital engagement is associated with specific skill acquisition.

Another perspective shared by parents is the difference in nature between recreational and educational activities.

*P8: "I think whereas recreational activities are more action-based, educational activities have specific aims. While recreational activities give more freedom to children, educational activities aim for specific skills that help to improve their development areas. So, they are different from each other."*

This parent's insight highlights how they perceived the contrasting characteristics of the two types of engagement. Recreational activities are often more spontaneous and open-ended, while educational activities have defined objectives.

One parent noted that their child finds recreational activities more attractive compared to educational activities. Although parents want children to perform educational activities more, children are keen to engage in recreational activities.

*P6: "I think children prefer recreational activities more although as parents we want them to engage in educational activities…"*

This observation may reflect parents' perception that children have a natural inclination towards activities that provide immediate enjoyment. In summary, parents' insights offer a rich understanding of differences and considerations in educational and recreational engagement with technology.

Parents provide valuable insights into the various purposes behind their children's digital

engagement. Parents indicated plenty of reasons for their children's digital engagement. These are social aspects, educational preparations, skill enhancement, the necessity of technology, parental reasons, and children's own desires respectively.

One of the parents noted that their child's interaction with technology is often influenced by their peers.

*P7: Since all her friends from school watch TV, play with phones and talk about them, she wants to watch TV and play with smartphones.*

Moreover, the influence of older siblings on younger ones' digital experiences is also mentioned by another parent. Children sharing their digital experiences or observing the digital experiences of other children may fulfil a child's need to engage in digital devices. Parents interpreted this as reflecting the social aspect of children's technological engagement.

Some parents emphasised using technology to prepare their children for elementary school and to practice educational activities they perform in preschool. They mention the use of educational applications to teach numbers, letters, and shapes to practice school events.

*P3: "We use tablets to practice what he learns at school. This way I think learning is more effective."*

Parents also mentioned that their children use digital devices to improve and learn some skills. This includes activities like piano lessons and dance choreographies where digital devices are used to practice and memorise songs and dance choreographies.

*P9: "… he is taking piano lessons. Sometimes, we play some of the piano songs, which he tries to learn, for him to memorise them."*

Another parent indicated that they encourage their child to engage in digital devices so that they can improve their digital skills which the parent believes that skills will be required in the future.

*P7: "I think it is critical for her to improve her digital skills which she is going to need in her life…"*

Moreover, parents reported that technology is a necessary part of not only adults' lives but also children's lives. They believe it is critical for them to learn how to use those devices.

Parents also reported that they let their children use digital devices to keep them busy. When they have responsibilities or tasks to do and no one around to take care of the child, they give permission to their child to engage in digital activities. It gives parents an opportunity to do their tasks. Moreover, they mentioned that when they need to relax and have some personal time, they encourage their children to encounter digital activities to make them feel better.

*P2: "When she is busy watching cartoons, we have some time to relax."*

It is also reported by parents that children desire to engage in digital activities for other specific reasons. To illustrate, one parent indicated that their children encounter digital activities when they get bored. Another parent mentioned digital activities attract them compared to traditional ones. It is also reported by parents that their child whines a lot when they want to interact with digital devices.

*P5: "When he whines a lot, we let him watch TV or let him play with his smartphone."*

Parents highlighted a range of purposes for their children's digital engagement, including socialising, educational preparation, skill enhancement, parental reasons, and children's desires. Their approach to technology use is often guided by a combination of these factors. Moreover, it reflects a complex decision-making process between children and their parents.

**Subtheme Socio-Cultural Context**

The influence of cartoons on children's understanding of culture is mentioned by some parents. They indicated that their children learn some cultural concepts from the cartoons they watch on TRT Cocuk. Moreover, they indicated that modern cartoons incorporate cultural traditional and moral values. One of the parents reported that their son learned from the cartoons to respect elders and kiss their hands during Eid. Another parent noted that their child attempts to integrate what they see on screen into their real-life experiences. However, sometimes they encounter things that do not belong to their culture, and they may attribute different meanings to such foreign cultural elements.

*P6: "He tries to integrate everything he sees on the screen into real life. If he cannot see any connection between what he sees on the screen and real life, he is confused. Sometimes, he sees things that do not belong to our culture."*

According to parents' narratives, interaction with digital devices may result in learning and adapting to cultural elements. However, they can also experience confusion when they encounter elements that do not belong to their culture.

One parent questioned, on the other hand, the value of children watching cartoons, expressing doubt about whether the valuable messages or cultural elements within them effectively resonate with children's minds and have a lasting impact.

*P7: For instance, I don't think that watching a cartoon on television provides any value to a child. Of course, some cartoons may contain positive messages about distinguishing right from wrong, sharing, friendship, and the importance of cooperation with others. However, I am not sure that these messages truly resonate with children's minds and have a lasting impact.*

One of the parents provided an example of introducing their child to a traditional folk play called "Karagöz ve Hacivat" through digital devices. The child's interest in this cultural performance led to an ongoing engagement with professional performers. Moreover, they watched educational videos related to this traditional play. This parent indicated that their child does not only watch videos about the "Karagöz ve Hacivat" show but also explores the preparation and workshop activities related to the show.

*P9: "…At first, he only watched the performance. Then he became interested in how the play is prepared and the workshop activities associated with it. He started to watch videos about the preparation and workshop…"*

One parent's account of 'Karagöz and Hacivat' illustrates how they see technology as a tool to transmit cultural heritage and traditional art forms to the younger generation. Moreover, technology serves as a platform for children to engage in cultural activities and expand their understanding of culture beyond passive viewing.

Some parents indicated that they engage their children's digital experiences. They mentioned watching content with their children. These shared viewing experiences provide an opportunity for conversation and interaction. Moreover, they highlighted the importance of asking questions and engaging in discussions about what they watch, which enhances the social value of the digital experience.

*P5: "…I ask him questions like what is happening, what is it there? A couple of days ago, we watched a video about making cookies and we did the same cookies following the video we watched."*

Parents also reported that sometimes children are inspired by what they see on the screen and want to practice them in real life. Parents' and children's collaborative digital engagement may also provide children with the opportunity to have real-life experiences with their parents. This demonstrates how screen content can inspire children to create or learn something in real life when parents actively engage with their children.

*P2: "…we watch origami videos on YouTube and try to make them with paper. Sometimes we try to make them individually and give each other points about our results."*

These parental statements underscore how they view parent-child interaction as significant during digital engagement. Parents can play a critical role in children's digital experience. Joint activities, discussions and sharing learning moments can enrich children's experience not only with digital devices but also in their daily lives. These findings show that parental discourses on digital play are situated within the macrosystem of EST in which cultural elements, social expectations and national media context affect the way digital content is assessed and managed by parents in the home microsystem.

**Subtheme Screen Time and Its Potential Outcomes**

Parents reported valuable information about children's screen time and its potential impact on their children. Some parents claim that children spend moderate time with technological devices. A considerable number of parents, on the other hand, reported concerns about excessive utilisation of digital usage. Parents express concerns about the potential negative effects of excessive screen time. One of them mentioned potential outcomes like addiction and aggression resulting from prolonged use of digital devices. Another parent indicated that while digital engagement may positively affect children's creativity, excessive time spent with technology leads to more negative effects. Another parent highlighted the risk of attention deficit disorder and emphasised the need for content and time rules to mitigate these negative effects.

*P5: "…if they spend too much time with technology there are many adverse effects, such as attention deficit disorder. We have observed this in our child…"*

Parents also discussed the impact of the COVID-19 pandemic, which led to children spending more time at home. Subsequently, engaging more with technology due to restrictions on outdoor activities is reported. Moreover, parents expressed a desire to return to a more balanced routine with reduced screen time as the pandemic has prevalence decreased. This illustrates the importance parents place on finding a balance between technology and other activities in their children's lives.

*P10: "… After the spread of coronavirus, their engagement with technological devices has changed. The time they spent at home dramatically increased. As a result, the time spent with technological devices has increased, too. We used to spend time outside in the park and playground, and they used to play with other children. However, because of the coronavirus, we couldn't go to the park or playground. As a result, technological devices are now used by children more than they used to be. Now, the prevalence of coronavirus started to decrease. Consequently, we are trying to go back to our old routine. That means we are trying to go out more in their leisure time and trying to decrease the time they spend with technological devices.*

Parents' statements emphasised the importance of moderation in screen time, particularly during the COVID-19 pandemic, when technology became a more significant part of children's lives due to limited outdoor activities. Parents expressed concerns about the potential negative effects of excessive screen time while striving to find a balance that allows children to benefit from technology while not being overwhelmed by it.

From the insights provided by parents, we gain a clear understanding of children's digital interactions. The 'Types of Engagement' subtheme highlights the range of digital activities children are involved in, painting a comprehensive picture of their digital experiences. The 'Socio-Cultural Context' subtheme showcases technology as a critical device for socializing and cultural learning, although it also presents challenges in distinguishing between local and foreign cultural elements. The subtheme of 'Screen Time and its Potential Outcomes' stress the importance of moderation, emphasizing that while technology can offer significant benefits, its excessive use can lead to adverse

effects. It is evident that informed parenting is pivotal in guiding children through their digital journeys.

These parental perspectives reflect the microsystem level of EST, where parent–child interactions shape rules and routines around screen use in their home setting. At the same time, the influence of the chronosystem is evident in parents' accounts of COVID-19, which temporarily shifted children's digital engagement patterns.

**Theme: Autonomy and Control**

| **Theme: Autonomy and Control** | | |
|---|---|---|
| **Subthemes** | **Codes** | **Examples** |
| Parents' Control and Guidance | -Children Decide, Parents Control<br>-Parent Guiding<br>-Parent Time Control<br>-Parent Content Control<br>-Filters and Similar Methods | As parents, we have more control over her digital experience. We apply the time rule. |
| Children's Autonomy and Control | -Decision Making<br>-Too Young to Control<br>-Content Control<br>-Time Control | As he is very young, he cannot control it. |

**Figure 6. Parent Theme: Autonomy and Control**

This theme examines the control and autonomy of children's digital engagement from a parental perspective. Two subthemes emerged from the interviews with parents about the control of children's digital engagement: "Parent's Control" and "Children's Control". In the first theme, parents revealed their efforts to supervise their children while granting some autonomy in the decision-making process. They also discussed the challenges and conflicts they face in trying to establish a safe and beneficial environment for their children. In the second subtheme, parents detailed the extent of their children's control and elaborated on why children at this age cannot fully control their digital interactions.

**Subtheme Parents' Control and Guidance**

Parents have provided plenty of information concerning guidance, control, and decision-making of their children's digital engagements. Most parents emphasised the importance of controlling children's engagement. Several parents expressed concerns about potential negative consequences if children are not controlled. One of the parents conveyed that if a child is not controlled, it will lead to negative consequences. They illustrated this by mentioning that they observed a preschool child imitating the series 'Squid Game' which they believe is not even appropriate for adults.

However, controlling, and guiding children in the right direction is not that simple. Most parents seem to struggle with finding the right balance between allowing their children to have some control and guiding them in beneficial ways. While some parents put strict rules, others try to give their children some space to make their own decisions. To illustrate, whereas some parents indicated that they have full control over their children's digital engagement, others mentioned that although they have most of the control, they let their children decide what activities they want to encounter. Those who adapt to giving children some agencies tend to check the content of activities before allowing their children to engage in them.

*P8: Actually, she decides what to watch. However, we check the content.*

In terms of monitoring content, parents reported various factors. Some highlighted age appropriateness, while others indicated that they prefer educational content or content that would be beneficial for their children. Some also mentioned that they only allow their children to watch channels they trust regarding content. Interestingly, one of the parents stated that they previously decided what their child would watch, but after witnessing negative consequences, they prohibited that content, and now they have full control over the content their children encounter.

*P5: Her mother and I decide what he is going to watch. He used to watch some cartoons that we thought affected him negatively and we prohibited them. And he knows that.*

Moreover, according to parents, different devices offer varying levels of control. One of the parents indicated that tablets and smartphones are easier to control compared to TVs. Tablets and smartphones may offer parents more monitoring and controlling options

than traditional TVs where children can access a broad range of content without restrictions.

Some parents also emphasised the importance of filtering tools to manage children's digital experiences. They highlighted the benefit of using a child filter on tablets and smartphones, which restricts access only to age-appropriate applications, ensuring children do not encounter unsuitable content. Moreover, they indicated that they use an application to prevent downloading apps without their permission.

*P4: I downloaded an application to his tablet. He cannot download anything without my permission.*

While most parents stated that their children have a voice in the decision-making process regarding content, many expressed that they are stricter when it comes to the amount of time spent with digital devices. They claim that they set specific time limit rules. While some put daily time limits, others only allow their children to use digital devices only on weekends. However, parents' strategies for implementing time rules vary. For instance, one of the parents indicated that they set an alarm before giving the phone to their child, and the child returned the phone once they heard the alarm sound. Another parent who allows their children to watch cartoons for an hour daily mentioned that they permit their child to split that hour into four 15-minute sessions or use it all at once.

*P2: … I give her 1-hour permission to watch cartoons. She can spend 15 minutes watching cartoons 4 times a day or she can spend an hour at once.*

Moreover, some parents indicated that they need to set examples and be role models for their children when it comes to children's digital engagement. This involves both limiting their own screen time and participating in children's digital experiences to guide them effectively. It can be said that those parents believe monitoring and setting time and content limitations are not enough to guide children in the right direction with their digital engagement. Supporting this idea, one of the parents reported that after the birth of their child, they stopped watching TV and claimed that their child was not interested in watching TV.

Many parents discussed challenges and conflicts when attempting to guide or restrict their children's digital engagement. For instance, one parent noted that managing and directing their children's digital activities can be complex, leading to disagreements

when they try to set limits. Sometimes, these disagreements have been observed to turn into punishments. One of the parents mentioned that if their child does not follow the time rule and spends more time than allowed, they will be punished for not allowing the child to use technological devices for a day. Furthermore, parents shared their struggles in redirecting children towards non-technological activities. They also emphasised that their responsibilities extend beyond merely monitoring digital interactions; they also involve balancing digital and real-life activities.

These parental narratives can be interpreted through the microsystem of EST, where parental rules, routines, and practices influence children's digital experiences. The interplay between parental control and children's autonomy also reflects the play typology by Howard and McInnes (2013) by demonstrating a distinction between educational play and recreational play. According to reports from parents, recreational play is more flexible, while educational play is more guided.

**Subtheme Children's Autonomy and Control**

The statements from parents provide profound insights into how much control their children have over their digital experiences. Some parents indicated that their children have control over their digital engagement by making their own decisions. To illustrate, one of the parents mentioned that their child chooses what cartoon they want to watch. Another parent indicated that their children make their own decisions about the game they want to play. On the other hand, some parents indicated that they grant their children a certain degree of autonomy in this regard. For instance, one parent stated that they made an agreement with their child not to use the smartphone without permission.

*P9: We made an agreement together. He doesn't use my phone without permission. I haven't put any lock or password on my phone, so he can use it.*

Some parents reported that children of this age cannot exercise complete autonomy or control over their digital engagement. For instance, one parent mentioned that although their daughter knows how to exit inappropriate content and understands which types of content she should or should not watch, she still cannot exercise full control over her digital activities due to her young age.

Similarly, some others pointed out that their children do not know when to disengage and they do not seem to lose interest easily. They also noted that if they are given the

chance, they might spend the entire day engaging in digital activities, such as playing games or watching videos.

*P2: I think she has no control at all. If we let her, I think she can play or watch videos all day.*

Interestingly, one of the parents mentioned that their child chooses videos from the recommended videos while watching videos on YouTube. While this parent generally believes that the recommended video system works well, they acknowledged that occasionally the child may come across inappropriate content. They also reported that even though the child knows how to close a video when they see something they are afraid of or do not want to see, the parent emphasized that they continuously monitor their child's activity. This statement offers further evidence for the idea that children cannot have full control over their digital engagement, and they need to be monitored.

From parents' feedback, it appears that various strategies are employed to manage children's digital interactions, both in terms of content and duration. They have emphasized the importance of supervising their children's digital interactions to prevent potential negative impacts. While many parents allow their children a degree of autonomy, some maintain that they exert full control. Some rely on applications for monitoring, while others prefer direct supervision of their children's activities. However, these approaches often come with their own sets of challenges and conflicts with children.

Several parents emphasised the value of modelling appropriate digital behaviours. They assert that setting boundaries alone is insufficient; active engagement and exemplifying responsible behaviours are essential. Ultimately, parents aim to ensure a safe and beneficial digital environment and balance real-life interactions with digital interactions.

Parents generally believed that children could play a role in the decision-making process. However, due to factors such as children's young age, their uncertainty about when to stop, and their tendency not to get easily bored in their digital experiences, it is considered that full control and autonomy may not be possible for them.

These narratives from parental perspectives demonstrate how children's developing autonomy is related to the microsystem of Bronfenbrenner's EST, in which children's digital experiences are directly affected by parental attitudes and supervision.

**Theme: Development Domains and Creativity**

| Theme: Development Domains and Creativity | | |
|---|---|---|
| **SUBTHEMES** | **CODES** | **EXAMPLE** |
| Creativity and Imagination | - Nature of Creativity<br>- Constraints on Creativity<br>- Creativity Educational vs. recreational | I believe that children's interaction with digital devices enhances their creativity. |
| Physical Development | -Spending too much time. Physical<br>-Play content differently. They need physical play | …they also need to engage in physical activities. |
| Social and Emotional Development | - Digital Devices Fostering Communication<br>- Expressing Through Digital Experiences | …they have a chance to express their feelings and thoughts by drawing. |
| Language Development | -Enhancing Language Development<br>-Excessive time for Language Development<br>-Purposeful Use | I think he has learned many language skills from the internet. |
| Intellectual Development | -Positive Intellectual<br>-Puzzles to learn about differences and similarities.<br>-Losing focus<br>-Learning stuff and using info in real life<br>-Specific skills children improve | …playing puzzles or defining objects' similarities and differences positively impacts learning and development. |

**Figure 7. Parent Theme: Development Domains and Creativity**

Parents noted that children are surrounded by digital devices from an early age, but the impact of these devices on learning and development remains uncertain from their perspective. This thematic analysis delves into the impact of digital engagement on children's learning and development from a parental perspective, encompassing various subthemes. It offers a comprehensive view of these complex relationships. Parents share their insights on how digital experiences affect children's creativity and imagination, physical development, social and emotional development, language development, and intellectual development, respectively. Their perspective reveals the nuanced interplay between technology and child development.

**Subtheme: Creativity and Imagination**

Parents provide a range of insights into how digital experiences influence their children's creativity. They highlighted both positive and negative aspects of the digital experience and creativity relationship.

Most parents believed that digital technologies have the potential to spark creativity. For instance, Lego apps have become a particular source of inspiration. After interacting with these applications, some children recreate the structure they have seen and venture beyond by innovating with their Lego pieces.

*P7: "…They not only imitate shapes with Lego (in real life) that they have learnt from the apps but also create something new with the knowledge that they have gained playing Lego games."*

Lego applications are not the only factor that fosters children's creativity. Moreover, these devices offer a wide range of opportunities for children who might not encounter them in their immediate environment. They encounter different objects and concepts that they have not experienced in their daily lives. To illustrate, according to a report from a parent the child approached their parent one day with an unusual idea about heating up Uranus as they expressed; *"Dad, Uranus is very cold; I want to lay underground heating pipes there."* The parent was noticeably pleased and attributed their child's knowledge of Uranus and coming up with such an idea about the planet.

Parents' statements suggested that children's digital experiences may encourage imaginative play. One of the parents explained that their children adapt other toys to

replicate items they encounter in the digital realm. To illustrate, when his son saw a helicopter in a cartoon for the first time, he began imitating it by affixing a propeller to the end of a toy drill. These cases were described by parents as showing that children not only learn from technology but also generate new ideas from their digital experiences. However, not all the parents expressed positive feelings about technological engagement contributing to creativity. Some indicated that it also holds the potential to stifle it. To illustrate, spending excessive time with technology is one of the most common examples of suppressing children's creativity reported by parents.

*P9: ... I think that if they excessively watch videos or play games, it can have a negative impact on their creativity.*

Moreover, some parents draw a line between learning from digital devices and creativity. They indicated that physical puzzles and drawing on paper contribute more to creativity.

Another parent voiced concern over how repeated exposure to specific digital content might shape a child's perspective. This parent noted that when you ask a child to draw a rocket, he comes up with different ideas and drawings. However, after seeing a rocket in a cartoon, their subsequent drawing often mirrored that exact design.

These narratives can be interpreted through the home microsystem of EST, where parents believed that children's interaction with digital devices and parental guidance shaped their creative development. Parents' perspectives also resonate with Howard and McInnes's (2013) play typology. It demonstrates the distinction between educational and recreational play. They described how some digital activities, such as Lego, puzzles considered to foster creativity, while some form of recreational activities, such as video watching, were perceived to hinder creativity.

**Subtheme: Physical Development**

Some of the parents expressed their concerns about the impact of digital engagement on physical development. One of the parents talked about how important play was for them during their childhood. They pointed out that the concept of the play during their time was predominantly physical, whereas nowadays, it is largely virtual. Although play is crucial for children's development, the parents emphasized the importance of balancing physical activities and digital play for the sake of children's physical development.

Furthermore, some parents claimed that spending excessive time with technology leads to a decrease in children's physical movements. They mentioned that their children become lazy and rely on their parents for basic physical activities like getting water or being fed.

*P8: ... spending a lot of time with technology restricts her movements. Instead of getting her own water, she asks us to bring her. She doesn't have her meal herself and asks us to feed her.*

**Subtheme: Social and Emotional Development**

Several parents observed what they perceived as various effects of digital interaction on their children's social and emotional development. Their experiences in the digital environment not only enabled social interactions in their daily lives but also used as a tool to express their emotions.

The reports from parents demonstrate how children construct a bridge between their digital experience and real-world conversations and social interactions with their parents, relatives, and friends. One of the parents reported that after their child started playing car games, they started talking to him about cars in detail. Another parent indicated that after watching a cartoon, their child expressed curiosity about 'doughnuts', a treat they had not encountered in the real world yet.

*P5: ... My child talks about what he has been seeing in cartoons. For example, a week ago he asked me if we could buy 'doughnuts', which he had not seen in real life.*

These examples symbolize a wider pattern where children absorb digital content and introduce it into real-life dialogues, fostering interactions and conversations.

Parents also reported that digital engagement plays a significant role in nurturing and sustaining relationships with distant relatives. One of the parents mentioned video calls with relatives abroad. This shows how technological devices allow children to maintain their interaction with distant people. Additionally, it enables them to expand their social circles and keep in touch with more people.

Moreover, the emotional aspect of children's digital engagement is noteworthy. One of the parents mentioned that drawing applications provide a platform for children to express their feelings and show their emotions. Another parent claimed that their child

imitates the dialogues they see in the cartoons they watch while communicating with their friends.

*P8: … in the cartoon he watches, a group of friends communicate with each other. He imitates their communication style and tries to communicate with their friends similarly.*

Parents' examples suggested a perceived connection between digital encounters and children's real-life social interactions. Moreover, it gives them an opportunity to express their feelings.

**Subtheme: Language Development**

The impact of digital engagement on children's language learning and development can be seen from interviews with parents. Some parents believe digital engagement is a positive tool for language learning and development. They claim digital platforms, as long as they are used appropriately, can aid children in learning new vocabulary and a foreign language – which is English – and improving their language skills. To illustrate, one of the parents highlighted that playing games on digital devices exposed them to new vocabulary. Another parent noted that their child learned some English colours from the cartoon they watched and used them while talking with their parents.

*P11: …He uses the English words he learned when talking with me.*

However, not all parents have positive feelings about the effect of digital engagement on children's language learning and development. Some of them reported adverse impacts on language development when interacting with digital devices for a prolonged time. One of the parents shares an example of a colleague whose child's extensive exposure to TV from a young age led to speech delay, communication challenges and limited interactions with parents. Another parent reported that excessive video-watching resulted in stuttering.

*P1: When he spends a lot of time watching videos, it has a negative effect on his speech. Once, he used to stammer while talking. He made sounds like 'ah, oh', which is not what he does normally when he speaks.*

While some parents focus on the strictly positive or negative effects of digital engagement on language development, others adopt a more complex stance. They believe that the key is the way of usage whether it has positive effects or negative effects. They emphasize that when digital tools are integrated thoughtfully and

strategically the learning experience can be enhanced. To illustrate, some parents reported that they use different applications to improve different language skills. Another parent noted that, although they try to teach English colours and numbers to their child at home, they demonstrate improved memory in a structured class that employs technology.

*P6: ... we teach him English numbers and colours. However, he learns better in the course since they use technological devices in the course. Because of the images he sees, he can keep what he learns in his mind.*

**Subtheme: Intellectual Development**

Many parents believe that digital engagement can facilitate the development of fundamental intellectual abilities, such as comparison of objects, problem-solving, decision-making, and logical reasoning. To illustrate, one of the parents indicated that after playing a game comparing and ordering the lengths of the objects, their child took out the forks and spoons from the kitchen cabinet to compare them. Some of them claim that decision-making games help children to understand cause-and-effect relationships. Another one noticed that playing detective games not only enhances their child's problem-solving skills in the virtual world but also is integrated into real-life situations by children. It helps them to find lost objects and come up with logical solutions.

*P10: When we lose something in real life, they try to find it by looking at the same places as they look in the game ...the skills they gain are not only helpful in the virtual world but also in real life.*

Parents' accounts indicated a perceived link between virtual and real worlds, suggesting that digital gameplay may serve as a learning tool.

Another parent feels that action games requiring swift movement are believed to improve children's reaction times. Moreover, a parent who encourages their child to play on a computer claim that using the keyboard and mouse simultaneously while tracking the screen activity has a dramatically positive impact on children's hand-eye coordination skills.

*P9: They need to watch the screen and use the keyboard at the same time. I think that helps them improve their hand-eye coordination skills.*

On the other hand, some parents hold neutral to negative perspectives on the intellectual developmental impact of digital activities, considering digital platforms as a source of entertainment. For instance, one of the parents expressed concerns that extensive use may lead to detrimental effects, such as loss of focus and forgetfulness.

*P3: … when she was spending a lot of time with technology, she used to forget things. While she was listening to us or her friends, sometimes she was losing her focus.*

Parents shared detailed accounts of how they perceived digital devices to impact children's learning and development. They conveyed that, on the one hand, technology has tremendous potential for the development of all development areas and creativity. On the other hand, it has been pointed out that the incorrect or prolonged use of digital devices may have a negative impact on children's learning and development.

From parents' perspectives, the relationship between digital experiences and creativity appeared complex. While some parents view digital engagement as a source of creativity through exposure to diverse ideas, others are cautious, citing concerns about the content type and excessive screen time. They believe that the nature of content, how it is integrated into real life, and the balance between digital and physical activities play crucial roles in shaping how these experiences affect children's creativity.

Parents suggested that with the evolution of the concept of play, children have become more oriented towards digital play. They observed that contemporary children participate in physical activities to a lesser extent compared to their own generation. Furthermore, they expressed concern regarding the potential adverse effects of prolonged engagement with digital devices on children's physical development.

According to parents, digital engagement has a significant effect on children's social and emotional well-being. The observation made by parents highlights how closely digital engagement is linked to genuine social and emotional reactions.

Parents' views on the impact of digital engagement on children's language development can be categorised into three groups: those who feel positive, those who feel negative, and those who believe in its purposeful and organised use for favourable outcomes. Most parents believed that engaging with digital devices may have positive outcomes for children's intellectual development. They believe children may improve specific cognitive skills with different types of gameplays. However, concerns are raised about

excessive usage negatively affecting their focus and memory. Furthermore, some consider digital engagement an entertainment activity and believe it has no meaningful impact on children's intellectual development.

Considering all the subthemes together, narratives from parents demonstrate how children's digital experiences are affected by the microsystem of Bronfenbrenner's EST, in which daily routines, parental guidance and attitudes, and immediate interactions play a critical role. Moreover, the narratives also resonate with Howard and McInnes's (2013) play typology. Educational activities, such as Lego apps and puzzle apps, were considered to support SPICE development, whereas prolonged use of recreational activities, such as passive video watching and violent games, were perceived to hinder it.

### 4.3.2. Practitioners' Perspective

#### Thematic Map and Themes

The figure below demonstrates the themes from interviews with practitioners. This chapter will discuss all these themes and subthemes in detail.

| Theme: Intended Purpose and Focus | Theme: Autonomy and Control | Theme: Development Domains and Creativity |
|---|---|---|
| • Reason to Use<br>• The Definition and Comparison of Recreational and Educational Engagement<br>• Recreational Engagement<br>• Educational Engagement<br>• Importance of Screen Time and its Impact | • Parental Control and Mediation<br>• Children's Autonomy and Control | • Opportunities Technology Provide<br>• Social and Emotional Development<br>• Intellectual Development<br>• Physical Development<br>• Language Development<br>• Creativity and Imagination |

**Figure 8. Thematic Map of Practitioners**

**Theme: Intended Purpose and Focus**

| THEME: INTENDED PURPOSE AND FOCUS | | |
|---|---|---|
| **SUBTHEMES** | **CODES** | **EXAMPLES** |
| Reason to Use | - Tech to make them eat<br>- To keep them busy or make them eat<br>-Tech time<br>- To do what they like<br>-Communication<br>- Tech to keep children busy<br>- Tech necessity | I think they use technological devices to kill time. |
| The Definition and Comparison of Recreational and Educational Engagement | - In terms of learning and development<br>- Targeted skills versus desire<br>- Interest<br>-Design Difference | …they help them improve targeted skills. Recreational apps, however, depend on children's own desires. |
| Recreational Engagement | -Devices They Use at Home<br>- Activities and Applications | They generally play games like Candy Crush and Angry Birds. |
| Educational Engagement | - Edu Engagement at Home<br>- Different Types of Activities | Sometimes we watch educational videos and documentaries. |

| | | |
|---|---|---|
| | - Activities to support learning<br>- Government Projects (EBA)<br>- Dancing and Rhythm Activities | |
| Importance of Screen Time and its Impact | -Attention Span<br>-Screen time depending on age<br>- Covid<br>- Spending too much time<br>- Time Affects Impact<br>- Radiation<br>- Time parent control<br>-Parents' awareness | They should not play for more than 30 minutes. |

**Figure 9. Practitioner Theme: Intended Purpose and Focus**

With technology embedded in children's lives, practitioners in this study discussed its everyday and educational uses, focusing on the intended purposes and outcomes of digital engagement. Based on practitioner interviews, this theme outlines practitioners' perspectives on the intended purpose and focus of preschool children's digital play. Most practitioners claim that children use digital devices at home for recreational purposes, such as playing video games, watching videos and cartoons. They reported that educational engagement only occurs when adults guide them or within school settings. Several practitioners connected children's digital play with boredom or interest and parental convenience, such as keeping children busy. A few of them noted that they

use them to communicate. Moreover, many practitioners emphasised the importance of moderating screen time.

**Sub Theme: Reason to Use**

Practitioners offered insights into the reasons they believed children interact with digital devices. Several of them suggested that children's digital engagement stems from multiple reasons. According to practitioners' reports, the reason behind children's digital engagement can be divided into two groups: Those stemming from the children and those stemming from the parents.

Practitioners emphasised that it is not possible to keep children, especially those between the ages of 3 and 6, away from technological devices, as they are born into a world surrounded by technology from day one. Several participants noted that children primarily engage with these devices to pass the time when they are bored or have nothing else to do, and engage in activities they enjoy, such as playing games or watching videos for fun. For instance, one practitioner indicated that technology serves as an alternative source of entertainment when playmates are unavailable or they are bored with their toys.

Interestingly, one practitioner noted the use of smartwatches among children for communication, especially for informing their parents about being at school.

*T5: When she goes to school, she gives me or her mother a call from her smartwatch.*

However, practitioners also pointed out that parents play a role, influencing children's use of digital devices. For instance, some have stated that parents allow children to use technological devices when parents are busy or have tasks to do. Additionally, it was conveyed that they also utilise technological devices to persuade their children to eat. They allow them to use technological devices while they are eating and take them back from the children when the meal is over.

**Sub Theme: Definitions and Comparison of Recreational and Educational Engagement**

Practitioners shared varied views on how they defined and compared recreational and educational engagement, highlighting perceived differences in design and potential influence on children's learning and development.

One of the practitioners indicated that recreational and educational activities are directly related to children's interests and are intertwined with real-life experiences. However, some argued that educational applications are designed to improve specific skills and aim to teach a particular subject, while recreational applications are intended solely for entertainment

*T12: …educational activities are designed to teach something or improve specific skills…*

Moreover, practitioners conveyed that while educational activities have positive impacts on children's learning and development, recreational activities have both positive and negative impacts on children's learning and development depending on the content they encounter. To illustrate, one of the practitioners indicated that children may improve their vocabulary by watching recreational videos. However, they may also learn negative words from those videos.

Some practitioners also suggested that whereas educational engagement has a tremendous impact on learning and development, recreational engagement has little to no contribution to learning and development, even if there is a minor impact.

**Sub Theme: Recreational Engagement**

Practitioners provided valuable insights into children's recreational engagements with digital devices, including different devices they encounter and applications and activities in which they engage. Many practitioners have reported an array of devices that children use in their home settings such as TVs, computers, smartphones, and tablets. According to teachers, these are the most frequently encountered devices by children. The majority of the practitioners reported that tablets and smartphones are the most popular devices followed by TVs. They also indicated that most children have their own tablets. Interestingly, a teacher residing in a rural area mentioned having access only to TVs and noted the absence of an internet connection in their home settings.

Practitioners also provided extensive details about the applications and activities children encounter. They reported that most children use technological devices for recreational purposes most of the time in their home environment. Additionally, one practitioner claimed that they only use them for recreational purposes because they are too young to use them for educational purposes.

According to several practitioners, the most frequent activities children prefer are playing games and watching videos or cartoons. Children engage in diverse types of games are mentioned. Some practitioners reported playing games named Angry Birds and Candy Crush, while others noted they play violent games such as PUBG. Although practitioners expressed concern about playing violent games, they also mentioned that some games are designed for educational purposes. Even though children play them for fun they end up learning something while having fun. Interestingly, one of the practitioners reported that boys play racing and fighting games, whereas girls prefer playing house games.

*T9: Boys, generally, play car race games, or fighting games, while girls play playing house games.*

Most practitioners expressed that YouTube is the most popular platform among children for watching videos and cartoons. Furthermore, they mentioned that some children have favourite YouTube channels they follow. However, they conveyed some children follow YouTube content that is not age appropriate.

Moreover, one participant expressed the need for more platforms to be developed for children.

**Sub Theme: Educational Engagement**

Practitioners generally described educational activities as applications designed to teach specific skills or reinforce learning. Contrary to recreational activities, they conveyed that these are not for killing time or for fun but rather serve as a continuation of school. Most practitioners shared varied accounts of children's educational engagement with digital devices, both at home and in schools or nurseries. Although a considerable number of participants claimed children do not encounter educational activities at home, others reported that, within the guidance of their parents, children do engage with various educational apps. Language apps, story apps, matching apps, educational videos, and foreign language apps were all mentioned by participants as resources utilized by children in home settings. Additionally, one practitioner indicated that children of highly educated parents engage in educational activities more than others.

*T7: They do not use it for educational purposes or activities. Children of highly educated parents use digital devices for educational purposes.*

Furthermore, practitioners discussed activities they conduct with technological devices in schools or nurseries. Many practitioners reported that smartboards and TVs are the devices they most frequently use in classrooms. They mentioned various activities, from visualizing the topics they are covering to watching images and videos related to the objective of the day and watching cartoons. They also expressed that these visuals and videos captured children's attention more effectively.

They also conveyed that they predominantly use technology to show visuals related to the activity of the day, posing questions to children, or engaging in discussions based on those images. Additionally, they mentioned utilizing it to watch cartoons or animations related to daily activities. Furthermore, many practitioners claimed to use technological tools to play music for rhythm and dance activities, with some even sharing that they display dance figures videos and encourage children to mimic these figures.

The digital activities employed by practitioners were not limited to those previously mentioned. One of the educators shared that they use an application called World Wall on their computer. Through this application, they played simple games related to the learning objectives they aimed to achieve that day.

Interestingly, one of the practitioners expressed a desire for children to actively use technological devices.

*T7: I want them to be active rather than watching something passively.*

They reported conducting an activity: after learning about the autumn season, they took a camera outside to capture images of nature and insects. Subsequently, they projected these pictures and engaged in discussions about them with the children.

Some practitioners mentioned participating in a project called e-Twinning. They conveyed that this project consists of basic games that support children's learning and development and take approximately 5 minutes to play. They also indicated that they sometimes find games related to the topic they are covering and send parents the link to these games to support and practice children's learning.

Some practitioners also mentioned that there is an application, which is called EBA, created by the Ministry of Education that can be used for free by both practitioners and children. They mentioned that this platform consists of games and videos that are age-appropriate and support the development areas of children. It was also noted that it

provides content that teachers can utilise during school, and there are also special contents for children. A few practitioners noted that the platform also allows them to track children's activities. However, it was also claimed that the activities on this platform focus only on cognitive development and do not include activities that support other developmental areas. Emphasis was placed on the fact that activities outside of this are aimed at recreational purposes rather than educational.

**Sub Theme: Importance of Screentime and its Potential Impacts**

Practitioners consistently emphasised the importance of limiting the time children spend with technological devices. They expressed their opinions about how much time children should spend with digital devices and the potential effects of excessive use. Most practitioners suggested that children should not spend more than half an hour per day on digital devices. However, one participant conveyed that this should be calculated as the child's age multiplied by 10 minutes. For instance, while 3-year-olds should not spend more than 30 minutes a day, 6-year-olds may spend an hour daily.

Some practitioners noted the impact of the coronavirus on their screen time. They reported that children's screen time increased with the lockdown brought on by COVID-19. Furthermore, several practitioners noted that children's screen time did not decrease even after the lockdown ended.

*T8: Because of the pandemic, they couldn't go outside, and they spent more time with technological devices. However, children's digital engagement didn't decrease after the lockdown.*

However, some practitioners attributed children's excessive screen time to families not monitoring them sufficiently. This will be further discussed.

Practitioners generally perceived that children spend more time on recreational than educational activities. However, they also asserted that even activities that would positively affect their learning and development will yield negative results if children spend excessive time with those devices.

Moreover, parents indicated the potential effects of excessive usage of digital devices on children. For instance, it was stated that playing games for prolonged periods will negatively impact their cognitive development and creativity. In addition, effects such as focus problems, indifference to what is happening around them, and exposure to

excessive radiation were claimed. Furthermore, practitioners observed that children who spend excessive time with technological devices have a shorter attention span compared to their peers of the same age.

Through the lens of practitioners, this thematic analysis delved into children's digital engagement, commencing with the reasons behind their use of technological devices. It can be inferred that these reasons do not solely originate from the children's desire but also stem from their parental consent. Moreover, it explores the definition of recreational and educational activities and compares them. Although there are some similarities between those activities, practitioners articulate significant differences in terms of their design and potential effects on children. The extensive array of recreational and educational activities that children experience is also detailed. While it is asserted that most children primarily engage in recreational activities at home, some practitioners suggest that children are involved in various educational activities as well. Additionally, despite varying opinions among practitioners regarding children's screen time, they collectively concur that excessive screen time adversely affects children's learning and development.

Practitioners' accounts also demonstrate the connection between the theories adopted in this study and the data. Their narratives reveal how children's digital play is embedded in the home and school microsystems, structured by family routines, parental strategies, and teacher involvement. Their accounts further reveal the role of the exosystem and chronosystem, including national programmes such as EBA and how COVID-19 increased children's screen time. Moreover, practitioners' narratives align with Howard and McInnes's (2013) play typology, demonstrating the distinction between educational and recreational play. While educational apps are considered structured activities designed to foster learning, recreational activities are seen to include gaming and video watching.

**Theme: Autonomy and Control**

| THEME: AUTONOMY and CONTROL | | |
|---|---|---|
| **SUBTHEMES** | **CODES** | **EXAMPLES** |
| Parental Control and Mediation | -Parent's Control over Children<br>-Importance of Parent Role<br>-Importance of Content of Engagement | I think just putting rules on digital engagement is not enough. Parents also need to do more activities with their children. They must develop an idea for their children like 'Let's do this, together.'. |
| Children's Autonomy and Control | -Children's Vulnerability<br>-Children's Digital Skills and Usage Limitations<br>-Children Control | Since children in preschool are not literate, they do not have much control. They need adults' help. |

**Figure 10. Practitioner Theme: Autonomy and Control**

This theme addresses the control and autonomy of children's digital engagement from the practitioners' perspective. This theme consists of two subthemes: "Parental Control and Mediation" and "Children's Control and Autonomy".

In the first subtheme, the various approaches adopted by parents regarding control over children's digital experiences, their autonomy concerning content and time management, and practitioners' thoughts about the subject will be discussed.

In the second subtheme, children's control over their digital engagement, their vulnerability, and their digital skills to manage their experiences will be discussed from the perspective of practitioners.

**Subtheme Parental Control and Mediation**

This subtheme delves into the variable perspectives of practitioners about parental control and mediation on children's digital engagement.

Many practitioners believed that parents play a critical role in mediating children's digital engagement. However, they asserted that some parents consider digital devices as a babysitter, and they do not have any idea about what content children engage with. Several practitioners tended to categorise parents into two groups. While some parents are actively involved and put rules regarding content and screen time, others have little, if not, control over children's digital engagement. They indicated that well-educated parents tend to have more control over children's digital engagement in terms of content and time.

*T12: Whereas educated people are aware of how much time children spend and what content they are engaged in, uneducated parents are unaware of those, in most cases.*
Furthermore, it was suggested that these parents only permitted their children to engage in digital content that was educational and would contribute positively to their development.
However, some practitioners conveyed that while parents' guide and control children's digital experiences, they need to ascertain that they provide their children with some space to make their own choices.
Some practitioners pointed out the potential consequences of uncontrolled digital engagement. They asserted that if parents do not control children's digital engagement, children may be exposed to harmful content such as violence, which could adversely affect their learning and development. To illustrate, one of the practitioners shared that they witnessed a child in the classroom playing a game inspired by the Squid Game series, which they considered to be inappropriate even for adults. One practitioner emphasised that such violent games may disturb children psychologically.

Practitioners also indicated that if parents steer their children towards educational and age-appropriate applications, digital experiences will be beneficial for the children. They expressed that content choice is critical for children's digital experiences to yield positive outcomes. One of the practitioners indicated that parents need to ensure children engage in producer engagement rather than passive consumption. They defined 'producer' engagement as interactive digital activities which promote learning and

development, while ‘consumer’ engagement refers to passive content which does not provide learning.

Furthermore, some practitioners demonstrated the role of practitioners to inform parents about their responsibilities in relation to children’s digital interactions and pointed out the importance of collaboration between practitioners and parents. They believe informing parents may lead to more effective guidance and control.

*T7: …we have started a program to inform parents about how children need to use technology, and how frequently they should use it.*

**Subtheme Children’s Autonomy and Control**

Practitioners provide nuanced insight into children’s autonomy and control over their digital engagement. Most practitioners shared concerns about children’s vulnerability. They suggested that the richly stimulating and colourful nature of digital devices exceedingly captures children's interest and leads to addiction. This addiction distracts them from learning by touching, doing, and feeling.

Moreover, practitioners highlighted that young children are particularly vulnerable when using technological devices. They expressed concern that, especially when devices are connected to the internet, children may come across content that is not suitable for their age.

In addition to children’s vulnerabilities, practitioners also indicated children’s limited digital skills. Most practitioners pointed out that being non-readers limits their control over the devices they encounter. They cannot read the text of the content they encounter, or they cannot type what they are looking for. One of the practitioners illustrated this as follows:

*T7: …if they watch something, they only know how to skip advertisements. Or if they play a game, they click the next level. They only follow directions.*

Despite these challenges, it is suggested that children learn how to control those devices by observing adults, especially their parents. However, the control skills children acquire by mimicking their parents do not mean that they become good decision-makers about the content or know when to stop. Although they may gain some digital skills such as knowing how to skip advertisements while watching videos and how to start

applications, they often lack control over time management and understanding which content to engage with meaningfully.

*T9: However, when they have a list of videos, for example for YouTube, recommended videos, they do not decide between them. They just randomly click one of them.*

Because of being non-readers and lacking digital skills, practitioners point out the importance of parental involvement. They indicate that if parents do not control children's engagement, excessive screen time and harmful engagement are inevitable. Furthermore, one practitioner conveyed that children can be quite clever in manipulating parents to spend more time with technological devices, indicating that parents need to be strict with the rules they set.

Some practitioners argue that children need to be instilled with self-control mechanisms from an early age. They pointed out the necessity of media literacy in the era we live in not only for adults but also for children. They suggest our responsibility is to ensure children can interact with technology safely and productively.

Practitioners expressed their observations and experiences about parental mediation and control over children's digital experiences. Parental approaches vary. While some use digital devices to keep children busy without monitoring them, others actively control children's engagement regarding content and time. Moreover, it is suggested that highly educated parents have more control over children's digital engagement, directing them toward educational content.

They also asserted that parents need to give some space to their children in terms of making their own choices. However, they need to be strict with screen time rules for their children to avoid harmful content exposure, which may negatively affect their learning and development.

Several practitioners expressed concern about children's vulnerability in the digital world. Practitioners argued that although young children have basic operational skills, they are too young to make informed decisions about content or to manage screen time effectively.

Finally, practitioners underline the importance of parental guidance and practitioners' role in educating both parents and children. They pointed out that children need to be

educated in establishing their own control mechanisms and media literacy to provide them safe and productive digital environment.

Practitioners' thoughts on autonomy and control underscore the importance of considering the context of digital play, which is closely related to the microsystem of EST. Children's control and autonomy over their digital experiences are directly affected by parental mediation in home settings and practitioners' attitudes in school settings. According to practitioners, it is not only parents' attitudes in the home setting but also their educational level that affects children's digital experiences, reflecting the influence of the exosystem in EST. Children's digital play experiences can also be categorised as either free play, where they choose what and how to play, or guided play by parents or practitioners, which aligns with Howard and McInnes's categorisation of recreational and educational play. These accounts also highlight a tension between free play (recreational) and guided (educational) play: some practitioners called for strong parental control, while others suggested that children should be given more autonomy. This contrast resonates with continuing debates over guidance and independence in young children's digital play.

**Theme: Development Domains and Creativity**

| **THEME: Development Domains and Creativity** | | |
|---|---|---|
| **SUBTHEMES** | **CODES** | **EXAMPLES** |
| Opportunities Technology Provide | -Technology to Expand Children's Experience<br>-Technology and Skill Enhancement<br>-Educational Advantages of Technology | Thanks to technology, teachers can show anything children cannot encounter without technology. |

| | | |
|---|---|---|
| Social and Emotional Development | - Integration of the Digital world into the Real world<br>-Social Limitations<br>- Technology as a Communication Tool<br>- Emotional Concerns | So basically, we have some small talk about what they do. |
| Intellectual Development | -Positive Impact on Intellectual Development<br>- Learning through Digital Devices<br>- Abstract Concepts<br>- Applications Improve Cognitive Skills<br>- Concerns about Intellectual Development | … puzzle games and matching games help them in terms of their cognitive development. |
| Physical Development | -Physical skills Enhancement<br>-Concerns about Physical Inactivity | For physical development, I think it is affected negatively as they just sit and stand still. |
| Language Development | -Second Language through Digital Media<br>-Digital Tools for Language Learning | They learn some vocabularies from videos and cartoons they watch. |

| | | |
|---|---|---|
| | -Negative Effects on Language Development<br>-Concerns about one-way Interaction | |
| Creativity and Imagination | -Recreational Activities and Creativity<br>-The Role of Engagement in Creativity<br>-Being Innovative<br>-Educational Activities and Creativity | They integrate the ideas they have gained from the activities in the digital world and in real life. |

**Figure 11. Practitioner Theme: Development Domains and Creativity**

Practitioners widely observed that young children use digital devices actively. However, the effects of these devices on children's development and learning remain uncertain. In this theme, practitioners' perspectives highlight how digital engagement may influence children across multiple developmental domains—including social and emotional, intellectual, physical, language, and creativity and imagination—while also pointing to the opportunities and challenges technology provides.

**Sub Theme Opportunities Technology Provide**

The practitioners' insights provide the potential benefits of technology for children's skill development, enriching their educational experience and its role in early childhood education.

Practitioners highlighted that technology offers various applications available on platforms such as Google Store and Apple Store that focus on fundamental skills. Practitioners reported that such applications may help children learn numbers, colours,

and basic English vocabulary, which will be discussed further. Moreover, they claim that technology serves as a valuable tool for children's learning when they have a particular interest. Children can explore their interests beyond what theirs and teachers can provide.

*T2: If they have an interest in something, sometimes they learn about the subject more than their parents and teachers know.*

Moreover, it is suggested that technology gives children the opportunity to provide experiences beyond their daily lives. Some practitioners highlighted how technology enables children to explore and experience the world beyond their immediate environment. This allows children to virtually visit places they might not have the opportunity to see in real life. To illustrate, virtual museums and tours can be used to introduce children to new places and cultures which expands their horizons and offers unique experiences.

Practitioners also stressed the critical role of technology in early childhood education. Some practitioners suggested that, in the digital age, technology and education are closely intertwined. It is suggested that technological materials often provide more stimuli and are more attractive to children, potentially making learning more accessible, efficient, and focused. Interestingly, one of the participants conveyed that educational activities often necessitate an extensive array of materials. Yet, digital platforms can equally foster educational outcomes, enable a more efficient learning approach and better integrate children into the modern world.

*T8: Digital applications give the same gains, and children can learn in a much simpler way and become much more integrated in today's world.*

Supporting this idea, another practitioner emphasised that smartboards are critical devices. They offer opportunities for various digital activities, allowing children to engage more actively with technology and fostering interactive learning experiences. Furthermore, some practitioners call for a deeper integration of technology into preschool education. They suggest the establishment of technology learning centres within preschool classrooms.

Some practitioners also indicated the importance of technology for children of low-income families. Supporting this idea, another practitioner emphasised that the

integration of technology into preschool education is critical for children from low-income families, specifically those who do not have access to modern technological devices at home.

**Sub Theme Social and Emotional Development**

Practitioners provide insights into the effects of digital engagement on children's social and emotional development. While some practitioners indicated the positive effects of those engagements, others emphasised about negative impact.

Some practitioners indicated that video or audio calls allow children to communicate with people living far from them. Moreover, they emphasised that digital engagement provides opportunities for children to engage in conversation with those around them. From their observations, practitioners suggested that children share their digital experiences with their peers, teachers, and parents, whether they talk about the games they have played or the videos they have watched. It is also suggested that the conversation is not limited only to what they have experienced; children try to integrate their digital experiences into physical play with their peers as well.

*T11: ...they criticise how to integrate the video game into their real-life play.*

Although these experiences typically have positive impacts on children's social and emotional development, in some cases adverse impact might be observed. To illustrate, one of the practitioners shared an example from their own class: a child who fears content they have experienced shares their experience with their classmates. As a result, they not only have their own concerns but also spread them to their peers.

Several practitioners believed that spending extended periods of time in front of a screen does not have any benefits for children's social and emotional development. Some practitioners suggested that excessive screen time results in one-sided interactions, which may not contribute to social and emotional development since the screen does not interact back with the children.

**Subtheme: Intellectual Development**

Practitioners provided nuanced insights into the effects of digital engagement on children's intellectual development. The majority of practitioners assert that digital engagement has tremendous positive impacts on children's intellectual development.

Some practitioners even suggested that digital engagement has the most significant effect on intellectual development compared to other development areas.

It is suggested that digital applications, especially educational games, and videos may enhance children's cognitive skills such as problem-solving and critical thinking. Practitioners felt these applications enable learning through images, and that such visuals may improve children's understanding of concepts, including numbers and colours. Moreover, some practitioners highlighted the importance of technology in explaining and making abstract concepts more tangible and accessible to children.

*T1: Since children at their age cannot think abstractly, technology is a useful tool to embody abstract concepts.*

Moreover, practitioners pointed out that the digital world introduces children to unique experiences and knowledge that they may not be accessible in real life. This may positively affect their intellectual development by broadening their horizon. However, one of the practitioners indicated that intellectual development may be positively influenced only when they are actively participating in activities instead of being passive like watching something.

**Subtheme: Physical Development**

Practitioners express the effect of children's digital interaction on their physical development. Some suggested that certain games and activities may help children's practical skills and reflexes. Some practitioners noted that some games require quick reactions and may help motor skills and coordination. Moreover, they indicated that some applications promote physical activities.

*T8: …there are applications that make children physically act and help them improve their physical development.*

Some practitioners claim that it depends on the activity or application children encounter whether it contributes to physical development or not. However, most practitioners expressed concerns about the negative effects of technology on children's digital engagement. They highlighted prolonged periods of sitting and standing still may lead to reduced physical activity. Moreover, one of the practitioners indicated that spending excessive time with technological devices may lead to a lack of motivation for physical activity. Interestingly, one practitioner claims that children are negatively affected

physically since they cannot adjust the screen distance while interacting with digital devices.

**Subtheme: Language Development**

Practitioners provide nuanced insights into the impacts of digital engagement on children's language learning and development. Some practitioners highlighted the potential benefits of digital engagement in aiding children to learn new vocabulary and enhance their language skills. Some practitioners believed that apps designed for language learning, e-stories, videos, and songs give children opportunities to enhance their language skills.

Moreover, several practitioners indicated that children may learn foreign languages (e.g., English, as mentioned) on platforms like YouTube channels and applications like Dream English Kids.

Interestingly, some pointed out that some children in their area come to school without knowing Turkish. Although they do not normally encourage it, a few practitioners reported recommending TV in specific cases to support faster Turkish acquisition.

*T10: I recommended that parents let their children watch TV, which I do not recommend. However, in this specific case, I did, since it helped them to learn Turkish a lot.*

Additionally, one practitioner indicated that they have some refugees in their class. They believe interacting with digital devices, specifically watching videos and TV, helps them to learn Turkish more rapidly.

However, not all practitioners believe that digital engagement, such as watching videos, contributes to language development. Some participants noted that while children may learn new words or phrases from the games they play, they can also pick up inappropriate or cursed words, especially from recreational applications. Moreover, some practitioners indicated that digital engagement often involves one-sided interaction with children not actively participate. Some practitioners were concerned that a lack of active engagement may not foster language interaction and could be associated with speech delays. There are also concerns that even if children are exposed to new words through digital games and videos, they might not truly learn them unless they are actively used and repeated in daily life.

**Subtheme: Creativity and Imagination**

Practitioners provided nuanced discussion into the impact of digital engagement on children's imagination and creativity. Most parents indicated that because of their stimuli-rich environment, digital devices may foster children's creativity. They indicated that children often integrate their digital experiences into real-life experiences. Moreover, they give different meanings to materials, use them in different ways and even create their own games and activities inspired by the digital content they encounter. Additionally, some practitioners asserted that they use digital devices to play sounds to stimulate children's imagination to foster their creativity.

*T7: ... the sounds they hear reveal different schemas in their minds imaginatively. I think that fosters creativity.*

Moreover, some practitioners believe that activity is a matter of deciding if digital content improves or not. They indicate that active engagement is critical when it comes to fostering creativity. Several practitioners felt that passive consumption does not nurture creativity and may restrict it. Moreover, it is also suggested that choosing the right application or activities alone is not sufficient. Instead of just consuming, children need to interpret, modify, and build upon their digital experiences.

A considerable number of practitioners claim that there is no difference between recreational and educational engagement in terms of fostering creativity. They point out that it depends on the content and activity they encounter. Some videos and games might stimulate creativity, whereas others do not affect it. To illustrate, painting games and games with different options may foster creativity because of their nature. On the other hand, some claim that educational activities may not have any impact on creativity since they are more structured and less imaginative.

*T4: I do not think educational activities have any impact on children's creativity since they aim to focus on specific areas.*

Practitioners provided nuanced insights into the opportunity's technology provides and its potential effect on all developmental areas of children. They indicated that technology provides plenty of opportunities for children in terms of learning and improving their skills. Moreover, it serves as a tool to enrich their educational experiences and introduce them to virtual worlds beyond their immediate environment.

Within the range of applications, technology also might aid children in their intellectual, social, emotional, and even physical development. Yet, the effectiveness of technology is inherently tied to its usage. However, factors such as passive use, excessive screen time and inappropriate content may hinder children's learning and development. Digital devices with their rich stimuli may enhance children's creativity and imagination as well especially when children use those devices actively rather than passively consume them. The impact of creativity largely depends on the nature of the activity, rather than whether it is categorised as educational or recreational. However, some practitioners argue that the nature of educational engagements does not necessarily foster creativity.

This section reports a thematic analysis of practitioner interviews. It provides nuanced information about children's digital engagement, the factors that affect their experience with digital technologies, and the pros and cons of digital engagement.

Practitioners' thoughts on autonomy and control underscore the importance of considering the context of digital play, which is closely related to the microsystem of EST. Children's control and autonomy over their digital experiences are directly affected by parental mediation in home settings and practitioners' attitudes in school settings. According to practitioners, it is not only parents' attitudes in the home setting but also their educational level that affects children's digital experiences, reflecting the influence of the exosystem in EST. Children's digital play experiences can also be categorised as either free play, where they choose what and how to play, or guided play by parents or practitioners, which aligns with Howard and McInnes's categorisation of recreational and educational play.

### 4.4. Chapter Summary

Adopting mixed methods, this chapter demonstrated children's engagement with digital devices and potential impacts from the perspective of parents and practitioners. The qualitative part examined demographic factors, including children's age and gender, and parental perspectives on their potential impact. The hypothesis demonstrated a relationship between children's age and digital habits as well as between their gender

and digital habits. Moreover, it indicated relationships between parents' gender and their thoughts on the developmental outcomes of digital engagement.

On the other hand, the qualitative part presented parents' and practitioners' experiences, highlighting themes including types of engagement, socio-cultural factors, autonomy, time and content control strategies, and potential learning and developmental outcomes. Parents provided information in relation to children's recreational and educational engagement with digital devices as well as socio-cultural engagement and autonomy and control strategies they adopt. Moreover, they reported the potential benefits of digital engagement in creativity, language learning and intellectual development. However, they raised concerns about negative outcomes, including excessive screen time, physical inactivity, and adverse social-emotional effects.

Practitioners provided valuable insight into similarities and differences between educational and recreational uses of digital technology. They pointed out the importance of moderating screen time to gain the benefits of digital engagement while mitigating negative effects.

Interpreted through Bronfenbrenner's EST, the interview data highlight how parents and practitioners perceive children's digital play as influenced by both family–school interactions and wider cultural and temporal factors. Their accounts further resonate with Howard and McInnes's (2013) distinction between educational and recreational play.

Moreover, the report demonstrates some contradictions between parents and practitioners. While many parents emphasised their active mediation at home, several practitioners perceived parents as overly reliant on digital devices to keep children occupied. These contradictions highlight the importance of critically examining differences between the perspectives of parents and practitioners. Moreover, while some participants – including parents and practitioners – stressed the potential creative and cognitive opportunities digital play offers, others cautioned the potential constraints on imagination and a decline in attention span, emphasising the ambivalence and contested nature of digital technology in early childhood. This shows that engagement of digital technology cannot be categorised as "good" or "bad" but rather as a dynamic process

affected by the interplay of context, mediation strategies and cultural elements across the ecological system.

In summary, this chapter presents nuanced statistical and experiential information about children's interactions with digital technologies and their potential outcomes, highlighting demographic differences as well as personal experiences in both school and home settings. These findings also highlight how Turkish parents and practitioners understand and regulate children's recreational and educational engagement with digital devices. Moreover, the data demonstrate how moral/traditional values affect Turkish parents' perspectives on children's digital experience and how practitioners are influenced by their personal beliefs, device availability, and their pedagogical knowledge.

# CHAPTER 5 DISCUSSION

## 5.1. Introduction

The previous chapter demonstrated the findings of this thesis, including both quantitative and qualitative data. This chapter discusses the key findings of the research, adopting Bronfenbrenner's Ecological Systems Theory (EST) as a guiding framework. The discussion is structured in two main sections. The first section presents the key findings, which are organised according to the research questions. The second section interprets the key elements of the findings through EST, providing valuable insight into how children engage with digital devices in these environments and how those environments affect their digital experiences.

This chapter investigates children's digital play within two different microsystem environments—home and school settings—and the connection between these two environments. Moreover, the discussion extends beyond the immediate surroundings of children, exploring the indirect factors that affect their digital experiences, including the exosystem, macrosystem, and chronosystem layers of EST. Finally, it examines the potential outcomes of digital play across cognitive, social-emotional, language, and physical domains.

## 5.2 Research Questions and Key Findings

This section outlines the key findings of the study regarding the research questions. It presents how young children engage with digital technologies in home and school environments from the perspective of parents and practitioners. The findings further reveal how digital play is variously framed by participants as educational or recreational, with some parental accounts also pointing to its emotional and expressive functions. This section also foregrounds Turkish parents' moral/traditional concerns, especially around children's cartoons and online content, as a recurring lens shaping digital play at home. Across all research questions, the findings also highlight clear contrasts between parents' and practitioners' understandings, priorities, and practices regarding children's digital play.

### 5.2.1. In what way do practitioners and parents report children use technology within and outside of the educational context?

Both practitioners and parents provided insight into children's digital engagement in home and school settings. They reported that children use various devices and engage in various types of activities. Both parents and practitioners stated that tablets and smartphones are the predominant devices preschool children encounter. Parents value digital devices in both recreational and educational ways. While some parents indicated that educational and recreational engagement are the same, others mentioned educational apps are designed for specific aims, such as acquiring or improving a skill, whereas recreational apps have no specific aims. These accounts illustrate how parents draw distinctions between educational and recreational digital play based on purpose and perceived outcomes, rather than the device itself.

In their home settings, parents play a vital role in mediating children's digital experiences, whether encouraging educational engagement at home or using these devices to distract them from doing their other responsibilities. Moreover, both practitioners and parents reported that parents' mediation strategies shape children's digital engagement at home. Some parents prefer full control of children's digital engagement on the content they encounter, and the time spent using those devices. Others, on the other hand, give their children some autonomy to decide the activity they encounter.

In contrast, children's engagement with digital devices in school settings is more structured and goal-oriented. In most scenarios, children do not directly engage with digital devices. To illustrate, practitioners reported using smartboards to visualise abstract content and support learning. One key reason for this is the lack of access to technology. However, some practitioners also reported children's active engagement. Government-supported projects such as EBA and e-Twinning are mentioned. These projects not only allow children to actively participate in digital technology at school but also reinforce the connection between home and school settings. It also enables practitioners and parents to track children's digital engagement which strengthens the cooperative work between parents and practitioners regarding children's digital experiences.

The findings suggest that the key difference between children's digital experiences at home and in school settings is that while engagement in home settings is more active and flexible, engagement in school is more structured and passive due to a lack of accessibility. Moreover, some practitioners suggested that preschool children may be too young to engage in certain educational activities effectively. Parental guidance and mediation were described by parents and practitioners as important for maximising learning opportunities at home. These differences reflect contrasting perspectives, with parents emphasising flexibility and autonomy in home settings, while practitioners prioritise structure, control, and curricular aims within institutional contexts.

### 5.2.2. What are practitioners' and parents' perspectives on children's use of digital technologies within and outside an educational context, and their potential learning and developmental outcomes?

Parents and practitioners provided insight into the impact of digital play on children's development and learning, highlighting both its benefits and drawbacks. Although both recreational and educational activities are reported to be beneficial for learning and development, concerns arose about excessive screen time. Participants noted that prolonged digital engagement may lead to negative consequences such as addiction, negative behaviours, speech delay and attention issues.

Practitioners emphasised the importance of activity selection in children's digital play activities. It is reported that interactive engagement and active parental involvement support learning and development, whereas passive engagement is perceived to have fewer positive effects. Playing constructive games and using drawing apps is reported to improve children's problem-solving skills and creativity. Some activities are reported to improve abstract thinking skills. However, some practitioners indicated that apps are limited compared to real-life activities and do not contribute to creativity and imagination as much as drawing on paper or solving puzzles.

Socially, the findings show that digital play connects children with distant family members. Children also share their digital experiences with their peers, fostering conversation between them. Moreover, parents report that children express their feelings through digital play. Such accounts suggest that, beyond educational or recreational

purposes, digital play may also serve expressive and emotionally supportive functions for some children. However, concerns have been raised that prolonged screen time may result in asocial behaviours and emotional detachment.

According to the findings, digital play also aids children in improving language skills in both their native and target languages. Many parents reported that children learn new vocabulary through digital experiences and integrate those words into real life. Moreover, exposure to digital media helps non-native Turkish speakers to adopt and learn Turkish faster. However, some practitioners claim that media exposure is a one-way interaction and does not contribute to language development. They also reported that exposure to inappropriate content may negatively impact language development and emotional well-being. While parents tended to evaluate digital play through its perceived benefits and risks for children's development, practitioners' accounts were more closely aligned with pedagogical effectiveness, activity design, and institutional expectations. Moreover, parents' concerns were specifically framed through moral and traditional values, with sensitivity to the messages and behaviours modelled in contemporary cartoons and digital media content.

### 5.2.3. What factors do parents and practitioners believe impact children's engagement with digital devices?

The findings reveal that demographic and environmental factors shape children's digital play. Quantitative findings show differences in children's digital habits depending on their age and gender. In terms of age, the data demonstrate that children over 6 years old spend more time on computers and engage more in educational activities, spending more time on reading and writing apps compared to those aged between 3 and 6. Regarding gender, boys spend more time playing video games and watching TV, whereas girls prefer drawing applications. Moreover, boys use digital devices more socially, playing with friends and using these devices outside the home. In contrast, girls tend to use technological devices while in bed.

This study adopted Bronfenbrenner's Ecological Systems Theory (EST) to understand children's digital use at home and in school settings, which represents the microsystem of EST. However, findings also reveal other layers of EST. At the microsystem level,

parents and siblings play critical roles in shaping children's digital experiences. Younger children are reported to mimic and participate in older children's digital engagement. Moreover, parental mediation strategies and active engagement directly affect children's digital play. While some parents reported providing some space for their children to make their own decisions about content, others regulate digital use and only allow educational activities.

The mesosystem, including the interaction between school and home settings, is reported to be crucial in supporting children's learning. These findings further illustrate how parents' mediation practices and practitioners' institutional responsibilities operate within different ecological layers, shaping distinct yet interconnected approaches to children's digital play. Practitioners noted the importance of school-home interaction to ensure children's learning continues at home, emphasising their role in informing parents about digital engagement. They also highlighted that government-based programs such as EBA and e-Twinning help strengthen the connection between home and school.

The finding also shows that cultural and gender norms affect children's digital experiences. As for gender, it is reported that boys play racing and fighting games, whereas girls prefer playing house games. These findings suggest that traditional norms may shape children's digital play. The data also demonstrates cultural elements in children's digital play. Findings reveal that digital devices are used to perform cultural content, and children learn their cultural elements from the content they participate in. These illustrations provide evidence that children's digital experiences are affected by the macrosystem within the ecological systems theory. In this sense, parents' moral/traditional evaluations of cartoons and digital content can be understood as a macrosystem influence that shapes what is permitted, encouraged, or restricted in children's everyday digital play.

Furthermore, according to data, the impact of COVID-19 on children's screen time remains, although the lockdown is over. Parents indicated that they struggle to reduce children's screen time to pre-pandemic levels. This highlights the chronosystem-level impact within EST.

Overall, the findings reveal that children's digital engagement shows both similarities and differences in their home and school environments. Although both provide opportunities for learning and developmental outcomes, differences can be realised. At home, children's engagement with digital devices provides opportunities for them to decide what content they want to engage with. They also engage in both recreational and educational activities. However, in school settings, children's digital experiences are predominantly educational, more structured, and goal oriented. High-quality apps and age-appropriate activities are reported to provide potential learning and development outcomes, whereas inappropriate content and unsupervised engagement may lead to negative consequences. Moreover, the findings show that children's experience with these devices is affected by various factors, including age, gender, device accessibility, context, and parental mediation strategies. The next section will discuss these key findings within the existing literature, including both consistencies and differences.

### 5.3. Discussion

The previous section demonstrated the key findings of the research. This section will discuss these findings in detail, adopting Bronfenbrenner's Ecological Systems Theory (EST) as a framework. It focuses on children's digital play in different environmental layers and its potential learning and developmental outcomes. It starts with digital play at the microsystem, consisting of children's digital engagement at home and in school, addressing both similarities and differences. It also discusses how children's digital play is affected by various factors in their immediate environment. Moreover, it discusses how these two environments are connected and disconnected from each other in terms of children's digital experiences. Then the investigation goes beyond children's immediate environment to the broader contextual factors: exosystem, macrosystem and chronosystem. Last, it discusses how digital play in these different environments affects children's learning and development.

#### 5.3.1. Children's Digital Play at Microsystem

This section begins with the comparison of educational and recreational engagements of children's digital play in home and school settings. It also investigates the factors

influencing children's digital play in these environments, including demographic and environmental factors.

#### 5.3.1.1. Educational versus Recreational Engagement

Microsystems, the immediate environment of home and school, play a critical role in shaping children's digital engagement. The findings show that children interact with a variety of devices, with touchscreen devices being the most commonly used among young children, as reflected in recent studies (e.g. Ofcom, 2024; Smahel et al., 2020). Both parents and practitioners noted that children's digital engagement is both educational and recreational.

At home, children's digital engagement is characterised by parental control and mediation strategies. Although some practitioners indicated that children primarily use digital devices for entertainment at home, parents reported that they encourage children to engage in educational activities designed to teach numbers, letters, shapes, matching, and self-care routines. These types of engagement are reported to extend informal learning beyond entertainment-focused use as highlighted in previous research (e.g. Bird & Edwards, 2015; Dunn et al., 2018; Marsh et al., 2016; Nguyen, 2016).

Both parents and practitioners reported recreational digital engagement at home, such as watching cartoons and playing video games. Depending on context, some reactional engagement is also considered beneficial in terms of learning and developmental outcomes. This aligns with previous research by Livingstone and Pothong (2022), who suggest that recreational digital play may contribute to children's development and learning. On the other hand, some practitioners expressed concern over passive consumption and excessive screen time, which will be discussed further in detail.

Both parents and practitioners acknowledged the learning value in children's engagement with both in school and home settings. However, some parents highlighted that educational activities are structured and goal-oriented, whereas recreational engagements are spontaneous and child-driven, fostering imagination and creativity. Moreover, the study by Bjorgen and Erstad (2015) shows that children also consider activities in school as task-focused, whereas digital activities at home are linked to interest, playfulness and exploration.

Furthermore, in most scenarios, practitioners stated that they retained a high level of autonomy and control over children's digital play. In this regard, children's digital experiences in school settings contrast with classical play theories such as Froebel and Montessori (Cohen, 2019) as well as development theories such as Piaget (1951) and Vygotsky (1978). Those theories highlight that decision-making in play fosters autonomy and supports children's development. Current studies also highlight the importance of autonomy and the decision-making process of play in digital environments, suggesting it contributes to children's competence, well-being and confidence (Loudoun et al., 2023). This was often attributed to the use of smartboards and TVs, which offer limited opportunities for autonomy and control.

Parents' and practitioners' accounts demonstrate how educational and recreational engagement with digital devices differ from each other, depending on their purpose and perceived outcomes, rather than the device itself. However, according to some participants and parents, the distinction between recreational and educational engagements is not clear in children's everyday experiences. This account aligns with post-digital perspectives, indicating that children's digital play can be understood as entangled with physical practices, meanings, and cultural activities, rather than confined to discrete categories, including educational vs recreational, appropriate vs inappropriate, literate vs illiterate and online vs offline (Mackey, 2003; Thiel, 2015; Wohlwend, 2019; Yoon, 2023). Yoon (2023) critiques this binary since these types of categorisations evaluate children's digital engagement through predefined learning outcomes. To illustrate, educational engagement is valued in terms of learning outcomes, while recreational engagement is often framed as primarily for leisure. However, Yoon (2023) suggests that learning and meaning making emerge simultaneously within children's playful experiences, not after play but in the process. Moreover, the findings indicate that children's digital and non-digital engagement is interrelated. Although this study does not focus on children's non-digital (physical) play, the data revealed the connection between digital and non-digital experiences. The findings indicate that children perform activities in real life that they learn in the digital world, such as comparing objects based on their length. These findings align with the post-digital perspective, as scholars claim that children's meaning-making extends

across digital and embodied practices rather than being confined to screen-based activities (Pettersen et al., 2025; Pettersen & Ehret, 2024; Thiel, 2015; Wohlwend, 2019).

To sum up, the findings and discussions in the literature suggest that children's recreational and educational experiences in the digital world cannot be understood as fixed or opposing categories. These experiences depend on context, which blurs the categorisation of educational and recreational activities and is shaped by practitioners' mediation at school, parents' mediation at home, institutional constraints, and children's own meaning-making across different microsystems, including home and school environments.

#### 5.3.1.2. Parental Mediation Strategies

In their home, on the other hand, children have access to smartphones, tablets and computers which provide greater opportunities to actively engage in digital play and make their own decisions. However, their autonomy and decision-making are shaped and constrained by parental mediation practices. The findings illustrate that parental mediation strategies are the key themes affecting their digital play at the microsystem level.

The findings demonstrate that parents employ various strategies to manage children's digital play at home. While some adopt strict control, others provide a degree of autonomy within set boundaries. Although most parents reported being strict about time limitations, some adopted a more flexible approach regarding content choice. However, some parents reported that their children often disagree with them and insist on engaging in activities of their own choice and spending more time. This aligns with current studies suggesting that parents struggle to intervene in children's digital play (Lundtofte, 2021) due to children's natural inclination to make their own choices (Işıkoğlu et al., 2023). Supporting this suggestion, another comprehensive study by Zaman et al. (2016) on parental mediation strategy also suggests that while implementing rigid rules on children's digital experience may lead to conflict and resistance from children, active mediation may contribute to healthy relations with children and more positive outcomes.

Taken together, these patterns suggest that parental mediation is a negotiated and dynamic process, shaped through ongoing interactions between parental intentions, children's agency, and everyday family practices. The findings show that parents' mediation strategies are shaped not only by how long children engage in digital activities but also by what activities children encounter. This aligns with the critiques that screen time is too simplistic to explain children's digital experiences, focusing on content quality, perceived educational value, and the nature of children's engagement, rather than duration alone (Barr et al., 2020; Blum-Ross & Livingstone, 2018; Hiniker et al., 2019).

Dy et al. (2023) also found that children who engage in digital activities with limited parental involvement tend to show lower scores in social and language domains, suggesting that the active participation of parents is more beneficial for learning and development. This also resonates with Vygotsky's view on social play, specifically in the concept of the Zone of Proximal Development, which highlights the key role of adults participating and guiding children's play.

Interestingly, Lu and Hao (2014) claim that parents' educational level is associated with differences in children's digital engagement. Children of parents with lower levels of education use digital devices for prolonged periods and recreational reasons, which corresponds with practitioners' observations that less-educated parents' children use digital devices for recreational purposes instead of educational ones. Another study indicates that middle-class parents have more control over children's digital activities and advocate children's sense of agency in decision-making, whereas parents from the working class restrict internet access and apply direct supervision instead of active participation (Hollingworth et al., 2011).

While overly rigid control and the complete absence of regulation have been linked in both participants' accounts and previous research to concerns around excessive screen time and exposure to inappropriate content, active mediation strategies are described as potentially providing children with opportunities to make decisions that may support their development and well-being, depending on context.

#### 5.3.1.3. Digital Play in School Contexts: Institutional Mediation and Pedagogical Constraints

Compared to children's digital engagement at home, children's digital engagement at school is shaped by institutional structures, pedagogical expectations, and practitioners' professional judgments, according to accounts from practitioners and parents. Unlike home settings, in which children's autonomy in their digital engagement is more flexible and shaped by parental mediation, digital play in school settings is described as highly structured, adult-directed, and more goal-oriented. Most practitioners stated that they have full control and autonomy over children's digital engagement at school, deciding what and how activities to engage in. They also reported that they employ digital devices as aids to learning, such as to visualise abstract concepts or support curriculum-related objectives. Consequently, children's digital usage at school is limited, and there is no opportunity for child-centred activities, where children actively engage.

Although several practitioners expressed a desire for more active and child-centred digital activities, they reported that the limited availability of digital devices in the classroom hindered their ability to prepare activities where children can actively engage. From practitioners' accounts, it can be seen that most of the participants' classrooms are equipped with a TV or a projector and a desktop computer. One of the practitioners reported that there was only one computer available in the classroom, and that the only way to prepare activities in which children actively participate was to take turns, which took a considerable amount of time. These findings resonate with previous research conducted in Türkiye, which reports that there is a mismatch between teachers' positive attitudes towards technology and the passive or teacher-directed ways in which digital tools are enacted in ECE (Çelik et al., 2023; Konca & Erden, 2021). Similar mismatch between practitioners' attitudes towards technology and their teacher-directed practices, where children are passive users of DT, is observed in international studies as well (e.g. Dong, 2018; Masoumi, 2015; Pölzl-Stefanec, 2021).

These findings show that external barriers, such as limited hardware, time pressure, and class size, are still among the most important barriers to the integration of child-centred DT use into Turkish ECE. In this study, practitioners reported that they relied on shared devices, TVs, smartboards, or a single desktop. This may force practitioners to use

teacher-directed digital activities, in which children watch or observe instead of actively engaging with the technology. This may be interpreted as a pragmatic response to routine classroom constraints rather than as resistance to child-centred digital play. Moreover, scholars indicate that pedagogical knowledge, technological knowledge and content knowledge are critical to integrating DT into ECE. According to the TPACK framework, the mere presence of DT is not sufficient. It requires practitioners to organise the complex interplay between PK, TK and CT, applying this combined knowledge in a way that respects the specific context of their students (Mishra & Koehler, 2006). In the Turkish ECE, in which learning is holistic, play-based and child-centred, using DT in a meaningful way might be even more complex. According to the data from this study, it can be interpreted that even though practitioners demonstrated strong PK and raised concerns over developmental appropriateness, their DT use relies on their CK, rather than exploratory or collaborative engagement. However, this might still stem from a lack of DT in Turkish ECE.

Considering Bronfenbrenner's EST, differences between children's digital experiences in different microsystems, home and school, reflect the distinct structures, expectations, and roles embedded within these contexts. Based on the accounts from adults, while practitioners' technology use is guided by pedagogical aims and more structured, children's digital experiences at home are more child-centred, in which children have more autonomy over what, when and how to engage in digital activities, and are embedded within everyday family practices. This shows children's digital experiences are not only shaped by devices but also vary across contexts and microsystems. The next section will discuss the demographic differences in children's digital play.

#### 5.3.1.4. Demographic Differences in Children's Digital Engagement

As previously discussed, children's demographic characteristics appear to have a significant influence on their digital play. This research found differences in children's digital habits depending on their age and gender.

The digital activities children engage in and the degree of autonomy in their digital play are significantly affected by their age and gender. This research found that children aged 3 to 5 engage more in recreational activities and spend less time on computers. This may

be partly explained by the greater complexity of computers compared to TVs and touchscreen devices. Current studies also found similar patterns. To illustrate, Lanna and Oro (2019) highlight that children under the age of two do not purposely engage in touchscreen devices in a purposeful way, whereas by three years old, they begin to demonstrate intentional gestures and interaction with apps they use. Similarly, Marsh et al. (2018) found that children below three years of age passively use digital devices, such as watching videos, while four- and five-year-olds prefer interactive applications with which they actively engage. Older children aged between 4 and 7 are claimed to use more complex digital skills, including navigating online content and understanding game rules, interacting with social media and searching on the internet (Oliemat et al., 2018). These patterns also suggest that differences in children's digital engagement cannot be fully understood through screen time alone, as age-related variations are closely linked to the type of device, the nature of activities, and the degree of adult mediation (Barr et al., 2020; Blum-Ross & Livingstone, 2018).

The data show that gender plays a critical role in children's digital engagement. Both qualitative and quantitative data reveal that boys prefer competitive and action-based games, whereas girls tend to engage in drawing and painting apps. Similar patterns can be seen in different studies. To illustrate, Mars et al. (2018) and Oliemat et al. (2018) noted that boys' tendency is to play action-based and strategy games, while girls are likely to use digital devices more in creative ways, preferring drawing and designing apps. Findings also demonstrated that while girls prefer using digital devices alone, boys are more likely to play with their friends. A similar study indicates that boys engage in social interaction significantly more than girls (Rajić & Tasevska, 2019). Interestingly, Hu et al. (2024) claim that older children display an advanced capacity for independent learning and knowledge transfer. This perspective highlights the potential importance of active parental engagement for young children. On the other hand, studies by Hu et al. (2024) and Pierce and Cleary (2024) found no meaningful relationship between children's gender and their digital habits.

It can be argued that while differences in age in children's digital play are clear and consistently observed, gender differences seem more flexible and context-dependent, which might be affected by personal preferences and cultural differences.

In summary, the microsystem plays a critical role in children's engagement with digital devices. The findings show that the nature of children's engagement with digital devices is affected by individual and demographic characteristics as well as parental mediation strategies. The next section will investigate how relationships between home and school interactions influence children's digital experiences.

### 5.3.2. Children's Digital Play at Mesosystem

The mesosystem, for this research, is the interaction between home and school environments, which affects children's digital play. Findings from this study reveal a significant impact of these interactions on children's learning in digital environments. The research conducted by Ashfaq et al. (2024) indicates that effective collaboration between parents and teachers is associated with positive outcomes for students' academic achievement and socio-emotional development.

The data highlights that government projects such as EBA and e-Twinning support children's engagement at school as well as in home settings through their design. Practitioners noted that these projects have the potential to facilitate cooperation between teachers and parents. They also noted that these tools not only provide structured and goal-oriented activities but also an opportunity for children to practice their learning at home. Moreover, these tools enable both parents and practitioners to track children's digital play, viewing what activities they engage with and how long they engage in them. This is supported by previous research on EBA, which suggests that preschool teachers emphasised that EBA promoted parents' participation and played a critical role in fostering parent-teacher partnerships (Özoruç & Sığırtmaç, 2023). Yet, practitioners reported that the apps on EBA are limited to aiming at cognitive development only and should enrich their content by focusing on other areas as well, such as socio-emotional and language development. Moreover, studies show that e-twinning does not mainly aim to support parent-teacher cooperation but to improve school-school collaboration, contrary to practitioners' statements.

On the one hand, parents actively monitor children's digital engagement on these platforms. This facilitates constructive teacher-parent collaboration. Consequently, children have safe and stimulating digital environments which support their

development and well-being. On the other hand, the data show that parental engagement at home is inconsistent, which diminishes the effectiveness of these initiatives. According to practitioners, parents' insufficient digital skills and lack of participation may prevent continuous learning. This might be due to the lack of guidance and structured support from teachers. It aligns with previous research by Palaiologou (2016), which found that parents express anxiety over their inability to utilise digital devices for educational practices and a desire for more support and guidance from educators.

To sum up, although there are available projects for parent-teacher cooperation, the findings reveal several limitations that may require further attention. Moreover, without clear strategies to involve and empower parents, these interactions appear insufficiently consistent in practice. Moreover, studies highlight challenges in supporting parent–teacher interaction, particularly in providing clear guidance for parents.

### 5.3.3. Beyond Micro- and Meso-Systems: Insights into Additional Ecological Layers

Although this study mainly focused on children's digital play within the micro- and meso-systems of Bronfenbrenner's ecological theory, the findings revealed the effects of other dimensions of the environmental framework. The data gained from parents and practitioners provided insight into the exosystem, macrosystem and chronosystem layers. Even though these layers are more removed, they still play a key role in impacting children's digital play indirectly. The data demonstrates that children's digital experiences are shaped by parents' workload, policymakers via government projects, cultural norms and the COVID-19 pandemic. These factors have a crucial influence on children's digital engagement, affecting not only the time they spend on technology but also the content they encounter. This section discusses how children are affected by the factors in the exosystem, macrosystem and chronosystem layers of ECT.

Regarding the exosystem, children's digital experiences might be affected by parental workload. Both parents and practitioners reported that parents allow their children to play with touchscreen devices when they are busy with their responsibilities, or they need to relax. As a result, children may engage in digital content with reduced parental supervision, which may be associated with excessive screen time and inappropriate consumption. These conditions may be associated with challenges in children's

cognitive, socioemotional and language development (Elias & Sulkin, 2017; Yadav & Chakraborty, 2022), a topic that will be discussed in further detail. Although this study discussed parental education level within the microsystem because of the direct effects of home dynamics, it may also be categorised into the exosystem since it might be considered a broader social context. Participants' accounts suggest that these practices were often framed by parents as pragmatic responses to everyday pressures, rather than as intentional educational choices, highlighting how exosystem-level constraints shape digital play indirectly through family routines and caregiving demands.

As for the macrosystem, children's digital experiences are affected by cultural norms and societal norms. Parents and practitioners reported how children learn moral values and cultural norms through their experiences in the digital world. A parent reported that their children learn the way of showing respect for older people by kissing their hands, which is part of Turkish culture. Another parent stated that their children became familiar with the traditional shadow play of Hacivat and Karagöz, which is a cultural heritage dating back to the 14$^{th}$ century, through digital devices. This demonstrates that children's digital play cannot be considered in isolation from the broader social context. Rather than simply transmitting content, digital play appears to function as a site where cultural meanings are reproduced, negotiated, and reinterpreted by children across home and school contexts.

On the contrary, children's daily activities in the digital world reflect the cultural values and norms of the society they live in. This aligns with Vygotsky's (1978) sociocultural theory, which posits that children's cognitive development cannot be separated from the cultural tools and social interactions they encounter. In their digital play framework, Fleer (2016) also discusses the value of culture in children's play. They suggest that while engaging with digital devices, children learn cultural values and build their own understanding of the values. Veresov and Veraksa (2023) define "normative situations" as "cultural norms that exist in society reproduced in an imaginary plane" (p. 1096), highlighting how children, during digital play, adopt social and cultural roles. These examples also reflect how children encounter global and local cultural narratives simultaneously through digital media, illustrating how digital play becomes a site of glocal meaning-making within the macrosystem (Marsh, 2015; Elias & Lemish, 2009).

Considering the chronosystem, the findings suggest that the COVID-19 pandemic has had a profoundly significant influence on children's play. According to data, the time children spend playing with technological devices has dramatically increased. Since people are restricted from going outside during lockdown, children are stuck in their homes. As a result, their play became more sedentary and shifted to digital environments. Research also showed that during the pandemic and post-pandemic periods, children's time spent at home with technological devices increased, while play with peers decreased (Burroughs et al., 2025; Kourti et al., 2021; McIsaac et al., 2023). Parents raised concerns about children's social and emotional development during the pandemic (Burroughs et al., 2025). However, studies have shown that children continued to engage in imaginative and pretend play at home (Kourti et al., 2021; McIsaac et al., 2023). Moreover, McIsaac et al. (2023) considered the pandemic as a chronosystem event that impacts children's play, as acknowledged in this study. Parents' reflections in this study indicate that these pandemic-related shifts have had lasting effects on children's digital routines, suggesting that chronosystem influences may continue to shape digital play practices beyond the immediate crisis period.

The impact of indirect factors, including parental workload, cultural norms and global events such as the COVID-19 pandemic, on children's digital play is discussed in this section. It highlighted the importance of wider social ecology when considering children's digital play experiences. Overall, it can be interpreted that children's digital play is shaped not only by immediate interactions at home and school, but also by broader social, cultural, and historical conditions. The next section will focus on developmental and learning outcomes of children's digital engagement, from the perspective of practitioners and parents.

### 5.3.4 Developmental and Learning Outcomes of Digital Play

This section delves into the potential learning and developmental outcomes of children's digital play, from the perspective of parents and practitioners. Moreover, it discusses the potential risks and challenges in terms of learning and development. It provides insight into four domains: cognitive development and creativity; language development; social and emotional development; and physical development.

#### 5.3.4.1. Cognitive Development and Creativity

The findings demonstrate that digital play potentially contributes to children's cognitive development. According to parents and practitioners, these virtual experiences aid children in improving problem-solving skills and abstract thinking. Moreover, as both parents and practitioners highlighted, children learn to compare objects in terms of their properties, such as length, and understand cause-and-effect relationships through their experiences. Besides these, learning is not limited to the virtual world but also integrates into real-life contexts. Studies also indicate that children's digital play is associated with improvements in cognitive skills such as reasoning, decision-making and problem-solving (Bochicchio et al., 2018; G. Johnson, 2006; Vedechkina & Borgonovi, 2021). Practitioners also emphasised cognitive benefits in digital play; however, they pointed out that such benefits were more evident when children engaged actively. Contrary to the general assumption and practitioners' presumption, Schroeder and Kirkorian (2016) found the opposite. They claim younger children benefit from passive observation compared to active play, emphasizing that making continuous decisions imposes cognitive load, which negatively affects young children's ability to learn (Schroeder & Kirkorian, 2016). Moreover, Mustola et al. (2018) discuss the terms active and passive engagement, suggesting that passive engagement, such as observing and watching, may still involve an active cognitive process including internal dialogue, imagination and learning by observing.

Moreover, practitioners noted the importance of app choice in relation to cognitive development. While educational apps are regarded as beneficial for children's cognitive skills, recreational apps are considered to have limited or potentially negative impacts on their development. Aligning with these perceptions, studies reported that the content type plays an important role in shaping cognitive outcomes. While educational content may support children's cognitive skills, recreationally designed content, such as fast-paced and non-normative, might overstimulate their brains (Anderson & Subrahmanyam, 2017b; Vedechkina & Borgonovi, 2021).

The finding reveals the impact of digital play on children's creativity and imaginations, from the perspective of parents and practitioners. As for creativity and imagination, both practitioners and parents reported pros and cons.

Parents reported that digital devices support children's creativity, providing them opportunities to encounter new ideas and objects. Moreover, their expression aligns with digital play theory, encouraging imaginative, exploratory and symbolic forms of play (Marsh et al., 2016) both in the virtual and real world. To illustrate, parents observed their children imitating virtual helicopters that they had seen in the cartoon which is categorised into symbolic play. Children are also observed integrating puzzle apps to create virtual objects, which is categorised in creativity play in digital play classification. Furthermore, the experiences children gain in virtual worlds are not limited to the virtual world but can also be observed in real life. The findings provide multiple examples of children transferring concepts from the digital environment into their real-life play. To illustrate, children not only create objects in the virtual world they also replicate the same figures in their play with traditional Lego pieces.

Practitioners noted the necessity of active engagement in their digital play to promote creativity. They asserted that passive consumption is less likely to foster creativity. This aligns with the study by Sakr (2018), which claims that digital play can enhance collaborative creativity when children actively participate in structured platforms. However, observations from parents demonstrate that after seeing a helicopter for the first time in a cartoon, children translate this experience into active engagement by using a real-life object to imitate the helicopter propeller through imaginative play. A similar pattern can also be seen in the study by Marsh (2016) in situations where children manipulate the game rules and create their own game.

Although most participants highlighted similarities between educational and recreational engagement in terms of fostering creativity, some indicated that recreational engagement with open-ended possibilities offers more creativity opportunities compared to educational activities due to their structured aims. This is consistent with the popularity of the open-ended game *Minecraft*, which offers various modes and play styles, allowing children to explore, build, and experiment freely. In line with this, numerous studies have shown that open-ended and flexible applications foster creativity in children by encouraging imaginative play (Bayliss, 2012; Caughey et al., 2024; Mavoa et al., 2018; Meier et al., 2018; Nguyen, 2016).

#### 5.3.4.2. Language Development

The findings show that both parents and practitioners provided supportive and critical perspectives on the effect of digital play on children's language development. Especially practitioners noted that the effectiveness of digital play depends on the way children engage with digital tools, as supported by existing studies (Ponti et al., 2017; Sundqvist et al., 2021; Vulchanova et al., 2017).

Parents and practitioners emphasised the value of digital platforms in supporting children's vocabulary acquisition, specifically in the context of foreign language learning. Parents reported that their children learn English through cartoons, educational apps and video games. Practitioners also highlighted the importance of children's exposure to foreign languages, encouraging refugee children and those learning Turkish as a second language to use digital tools to support their language acquisition. Such outcomes are echoed in the literature (Dalim et al., 2020; Demirdag et al., 2024). The study, which compared traditional and augmented reality (AR) in English learning among preschool children, found that children who engaged in AR activities performed better in colour learning compared to those who participated in traditional methods (Demirdag et al., 2024). Moreover, the result indicated that enhanced attention, motivation and peer communication. A similar study by Dalim et al. (2020) claims that AR with speech input leads to more active English use among non-native pre-schoolers, improving their vocabulary and boosting their confidence in speaking English.

On the other hand, both parents and practitioners reported that excessive screen time and unguided screen use may lead to negative consequences. The illustration of parents showed scenarios in which children who watch TV for prolonged periods experience speech delay, stuttering and reduced communication with others. Practitioners also expressed concern that the one-sided nature of TV watching may negatively affect their language development. This can also be seen in the literature, where a wide range of studies argue that passive exposure to digital technologies, including TVs and non-educational videos, may hinder children's language development and lead to delays in improving vocabulary and understanding grammar (Gath et al., 2023; Ling Yi Lin et al., 2015; Sundqvist et al., 2021). Studies also show that even educational content may not

be enough to foster language learning skills, highlighting the need for active adult participation (Marsh, 2016; Ponti, 2023).

#### 5.3.4.3. Social and Emotional Development

Both parents and practitioners noted that children actively use digital media in their daily lives to express their feelings and construct social interactions. The findings show illustrations from both parents and practitioners. Parents reported that children generate different ideas from the game they play or the videos they watch to initiate conversations with their parents and teachers. This is also supported by practitioners, who emphasise that children often construct dialogues about their digital experiences and imitate the communication they have experienced through digital devices in school settings. These observations highlight that digital media can foster social interaction between children and people around them, providing new subjects for them to stimulate different conversations.

In the school environment, the data aligns with the current studies that suggest digital technologies are useful devices in supporting children's social interaction and development. Undheim (2022) suggests that storytelling and open-ended apps may serve as a tool, enhancing children's social interaction by collaborating and constructing narratives together. Another study by Lawrence (2018) observed children's collaborative interactions, including turn-taking, helping each other, and verbal discussion in their digital play. Moreover, while engaging with open-ended apps, children have been observed participating in pretend play (Lawrence, 2018). This is echoed by parents, who report that children often mimic game characters and re-enact scenarios based on their digital experiences.

Parallel to the findings, studies have demonstrated that children use digital devices not in isolation, but as part of social interactions in their home environment. According to Murcia et al. (2024), digital devices may serve as a tool for communication and cooperation between parents and children. Konca and Tantekin Erden (2021) also asserted that children's social and emotional engagement with their parents occurs while engaging with digital technology. They observed children communicating with their family members, sharing experiences, and asking questions (Konca & Tantekin Erden,

2021). Toh and Lim (2023) also identified the different roles between children and parents while engaging digital devices, such as parent-directed style, parent-child-negotiated style and child-directed style. All of these styles offer unique collaboration and communication between parents and children (Toh & Lim, 2023).

Furthermore, both practitioners and parents reported that digital engagement plays a significant role in nurturing and sustaining relationships with distant relatives. This aligns with studies, suggesting that throughout the video and audio calls, children remain in contact with their distant relatives. These connections may support children's well-being as well as develop their social and emotional skills (Follmer et al., 2010; Glick et al., 2022; McClure et al., 2015; Strouse et al., 2021; J. Tarasuik et al., 2013).

On the other hand, practitioners expressed their concern about excessive screen time and passive engagement. Studies also reported that early television exposure and passive engagement are linked to negative or poorer socio-development outcomes (Bacigalupa, 2005; Kwon et al., 2022; Muravevskaia & Gardner-McCune, 2023; Stockdale et al., 2022). Skaug et al. (2018) also claim that traditional play fosters co-play and communication between parents and children compared to digital play.

In summary, parents and practitioners highlighted the potential benefits of digital play in supporting children's socio-emotional well-being. However, they also reported negative consequences of excessive screen time and inappropriate content. Many studies emphasised that the effect of digital play depends on content quality and social context. While unsupervised engagement and inappropriate content may lead to negative socioemotional outcomes, adult supervision and open-ended educational apps can support children's socioemotional well-being and development (Halle & Darling-Churchill, 2016; Muravevskaia & Gardner-McCune, 2023; Şenol et al., 2024; Swider-Cios et al., 2023).

#### 5.3.4.4. Physical Development

The findings reveal the potential effects of digital play on children's physical development. Both parents and practitioners raised concerns over excessive screen time potentially negatively affecting children's physical development. Most reported a perceived decline in physical activity among children associated with prolonged screen

time. To illustrate, according to observation from parents, children do not attend to basic physical activities, such as drinking water, and rely on their parents to assist them. These findings are supported by the study, which indicated that prolonged screen time in early childhood may negatively impact fine motor control and body coordination (Cadoret et al., 2018).

Although most of the practitioners reported concern over the sedentary nature of digital play, others stated that some applications might be beneficial for physical development. They noted that playing the game might improve their reflex and motor skills. The findings contradict the study by Bedford et al. (2016) regarding gross motor development, but they align with practitioners' beliefs about fine motor skills. Another cross-sectional observation study also suggests that children may improve their fine motor skills by playing games on touchscreen devices (Souto et al., 2020).

Overall, the data reveal that screen time's effect on children's physical development is associated with the activity and might be related to children's age. While excessive screen time and passive engagement are linked to poorer physical skills, there is a potential benefit to actively engaging with parental guidance (Bedford et al., 2016; Moon et al., 2019; Souto et al., 2020).

In summary, this section discussed how digital play may support children's different developmental domains. It also investigated the potential risks and challenges from the perspectives of parents and practitioners. The type of engagement, quality of content, and adult participation are crucial to determining whether these experiences negatively or positively affect children's development and well-being.

### 5.4 Chapter Summary

This chapter presented the key findings of the quantitative and qualitative data. Adopting Bronfenbrenner's Ecological System Theory, the data discussed children's educational and recreational engagement with digital devices from the perspective of parents and practitioners. In the microsystem, the discussion revealed similarities and differences between children's digital play in home and school settings. It also provided insight into demographic factors and parental mediation strategies influencing children's digital experiences regarding content and screen time.

The mesosystem focused on the relationship between these two environments, highlighting how potential cooperation and disconnection between parents and practitioners affect children's digital habits. The findings suggest that children's digital engagement is perceived as more valuable when parents and practitioners work together cooperatively. Moreover, although the thesis mainly focused on gaining insight into micro and meso layer level findings, the data revealed that children's play in digital environments is indirectly affected by various factors, including, parental workload, cultural and global elements over time. It can be interpreted that children's digital play cannot be isolated from social factors and global events.

Finally, the chapter discussed the potential learning and developmental outcomes from the perspectives of parents and practitioners. The findings revealed both pros and cons of digital engagement, highlighting the factors whether digital play is beneficial or harmful. The engagement types (active or passive), screen time (moderate or excessive), and active adult participation are considered to play a critical role in determining the outcomes of digital play.

# CHAPTER 6 CONCLUSION

## 6.1. Introduction

This chapter discusses the contributions and implications of this study to theory, practice and policy. It also explains the limitations of the study and recommendations for future research studies.

## 6.2. Implications for Theory, Practices and Policy

Drawing on the findings presented in the previous chapter, this section outlines the implications of the study for theory, practice, and policy. These implications are grounded in parents' and practitioners' accounts of children's digital engagement across home and school contexts.

### 6.2.1. Implications for Theory

This dissertation re-evaluates the traditional perspectives on play in a new context, given the existing discussions around digital play and contributes to the evolving scholarly conversation around the topic. While Bronfenbrenner's Ecological Systems Theory (EST) supported researchers in understanding the positioning of children's digital experiences within a nested environmental system, the results indicate that it is time for an expanded theoretical orientation that requires bringing together classical developmental theories with emergent conditions in the digital landscape.
Supporting Vygotsky's (1978) framework of social basis for learning and development, this study illustrates how children engage with digital play, in particular, in the home context where siblings are co-participants and parents are facilitators of the learning process, represents the concept of the Zone of Proximal Development (ZPD), with the well-structured support of knowledgeable others and devices, the learner is pushed towards independence. In a similar framework, Piaget's (1951) theory of cognitive development provides great insight into children's experience and engagement with digital technologies across ages. Quantitative measures show that the type of content children use and the amount of time spent using it vary greatly across ages. For example, older children tend to prefer educational or reading applications, consistent with the

concrete operational stage. In doing so, the study extends existing play frameworks by demonstrating how established play categories are reconfigured rather than replaced within digital contexts.

Adopting Howard and McInnes' (2013) categorisation of play, which includes recreational, educational and therapeutic, this thesis extends this typology by investigating how these categories are negotiated regarding young children's digital engagement across different contexts, including home and school, from the perspective of practitioners and parents. Based on parents' and practitioners' narratives, children's educational and recreational engagements in different contexts is often blurred in their everyday experiences and practices, especially when these engagements are discussed in relation to learning and developmental outcomes instead of considering this typology as fixed. Consequently, this thesis does not propose a new typology for digital engagement, but rather it contributes to how Howard and McInnes' (2013) categorisation of play can be considered in the digital world across different microsystems.

Moreover, the results correspond to the methodologies expressed by Froebel (Watts, 2022) and Montessori (Isaacs, 2018) that endorse child-led experiential learning. Although they were both grounded in the use of physical materials, this study shows that interactive and intentionally designed digital spaces can promote explorative learning and creativity. In particular, apps such as drawing and storytelling games promoted open-ended play for children, similar to Froebel's idea of self-expression and Montessori's emphasis on independence and purposeful activity. Furthermore, children's engagement within the context of digital activities that foster autonomy and decision-making is further aligned to Erikson's (1963) conceptualization of psychosocial stages of development, particularly the initiative phase of early childhood. Within this form of digital play, children can navigate aspects of their identities and self-regulation, particularly in recreational contexts where children can exercise agency to tell stories and co-construct play with others. This suggests that classical play principles remain theoretically relevant but require reinterpretation to account for children's engagement with digital tools as part of contemporary play ecologies.

Although this thesis does not adopt a post-digital perspective framework, according to parents' narratives, children's digital engagement at home is experienced as intertwined

with everyday, non-digital practices rather than as a separate or isolated activity. Accounts from parents provide empirical insight that resonates with post-digital perspectives, supporting the idea that children's learning and meaning-making blur in digital and physical contexts, specifically in the home microsystem, where children's digital play is integrated into their everyday practices.

Importantly, this thesis adopts Bronfenbrenner's EST not just as a descriptive theory, but also as an analytic framework to investigate how children's digital play is affected across school and home contexts. According to narratives from parents and practitioners, the findings show how children's digital experiences are organised and affected by not only adults' beliefs and expectations but also institutional structures, cultural and moral values. More specifically, the findings demonstrate that digital play in home settings is more fluid, child-centred, and embedded within everyday family routines, whereas school-based digital engagement is more structured, adult-directed, and aligned with pedagogical goals. This demonstrates how contextual differences in children's experiences may foster different forms of play. This thesis contributes to Bronfenbrenner's EST by discussing how children's digital experiences might be considered through interactions between children and adults across home and school microsystems.

Based on the discussed premises, this thesis contends that a reconsideration of traditional views of play is required to truly address the complexities of children's digital play. The evidence indicates that digital play needs to be part of the broader developmental frameworks and suggests that digital technologies can meaningfully support children's cognitive, emotional and social development in line with the developmental journey suggested by earlier theorists. Rather than positioning digital play as a departure from traditional developmental theories, the findings indicate that these theories provide a valuable lens for understanding how digital play is enacted, negotiated, and experienced across different contexts.

### 6.2.2. Implications for Practice

The evidence suggests a need to reconsider how both parents and educators approach children's early digital play. The findings point to the importance of intentional adult

involvement in children's interactions with digital technologies.

In summary, the qualitative data suggest that parents are to be involved and balanced in the children's digital engagement in the home context. Parents' engagement should neither be absent nor limited to a passive or spectator role in children's digital engagement. Building on Vygotsky's (1978) idea of guided participation, parents may support children's digital engagement by guiding without exerting excessive direction or control. When parents allow their child(ren) to choose, within parameters, what content they feel is appropriate and/or worthwhile, it promotes autonomy, creativity, and ultimately decision-making, which theorists such as Dewey (1933) and Montessori (Isaacs, 2018) support and value

The evidence suggests that within the school context, instead of passive digital engagement via smartboards, practitioners may benefit from engaging with various interactive digital tools. Practitioners are encouraged to use tablets with creative applications or coding games, which allow children to imagine and participate in collaborative play. This method aligns modern theories of play within education and values adult direction versus child-directed play. Furthermore, these activities align with Erikson's psychosocial initiative and industry stages, and practitioners should nurture practices like digital storytelling or collaborative games to help foster communicative or social-emotional skills.

The findings highlight the potential value of preparing early childhood educators in digital pedagogy and equipping them with strategies to integrate digital tools not only for teaching purposes but also to support exploratory, child-centred learning. Because processing emotions and experiences in early childhood is a particularly post-pandemic transition, therapeutic play elements may also be particularly useful in understanding how digital play may offer children opportunities to learn such skills.

### 6.2.3. Implications for Policy

The findings point to the potential value of further refinement of policy frameworks related to digital engagement in early childhood education. Practitioners' accounts point to issues surrounding device availability, institutional infrastructure, and the coordination of digital practices across home and school settings. Rather than

introducing new policy agendas, the findings point to the importance of aligning existing early childhood digital policies with the practical conditions reported by practitioners, particularly in relation to device availability and the feasibility of child-centred digital activities.

The findings highlight variations in digital technology provision across school settings, with practitioners reporting more limited access to devices in some schools, including those located in rural areas. Given practitioners' accounts highlighting differences in device availability across school settings, the findings suggest that existing policies may benefit from greater attention to the provision of age-appropriate digital devices in early childhood education, particularly in contexts where access is more limited.

Furthermore, once devices are provided for young learners, the findings suggest a need for policy provisions for digital content suitable for developmental purposes. These findings suggest a need for clearer guidance to identify age-appropriate digital content based specifically on educational importance and recreation, whilst also addressing concerns around the negative aspects of digital media consumption, including the amount of time spent on devices. These concerns were also noted by parents and practitioners in the qualitative findings discussing inappropriate or passive consumption, which led to addiction and delayed language development.

Another policy implication emerging from the findings concerns the coordination of digital practices between home and school settings. Programs such as EBA and e-Twinning, as reflected in practitioners' accounts, illustrate how government-supported platforms may support continuity between home and school digital practices. The findings indicate that these programmes may benefit from better supporting continuity in children's digital experiences by facilitating more fluid digital practices across home and school settings, particularly in relation to digital play and learning, thereby strengthening mesosystemic ties that are pivotal in children's development.

Finally, professional learning standards for early years educators should also be updated to include digital play pedagogy within their pedagogical approaches. Participants' accounts suggest that digital literacy is increasingly relevant within early childhood curricula, not only as technical knowledge but as part of broader developmental considerations. Sectors need to organise and coordinate their collaborative efforts and

highlight the potential value of coordinated efforts with ministries of education, technology developers, and child development specialists.

### 6.3. Limitation

This thesis also has some limitations, which will be acknowledged in this section. First, the data were collected within a specific geographical and cultural context: Türkiye and the quantitative findings are based on a small-scale dataset. Although the data provides multicultural findings, including information about refugee children and children from non-Turkish-speaking backgrounds, it mainly consists of children from Turkish culture. Consequently, the findings cannot be generalised and may not be applied to other cultural or geographic settings.

"Children's knowledge, judgement, foresight, freedom of choice, control, and agency are all very limited, especially pre-schoolers (Alderson, 2016, p. 206). This research aimed to involve children as active participants. However, authorities could not obtain the necessary permissions, and the survey method was replaced to understand children's experiences with digital devices. Although the quantitative data provided valuable insight into the thesis, children's voices are still missing in this research, relying on the perspectives of parents and practitioners.

While the literature review chapter discussed the therapeutic value of play, including in a digital context, this thesis did not collect data regarding the therapeutic value of digital play. Although it offers valuable insights into the educational and recreational value of digital play, it did not explore therapeutic aspects of digital play, emphasising how digital play can aid children's emotional regulation.

A further limitation of this study relates to the nature of practitioner accounts concerning children's digital experiences at home. In this thesis, the data on children's digital experiences at home settings are collected both by parents and practitioners. Although practitioners are not the direct observers of the home microsystem, they commented on children's digital experiences at home. These narratives involved criticising parental mediation strategies in some cases. Although parents would not be aware of this criticism, it still carries possible judgmental or deficit-oriented interpretations of parenting practices. This might be considered a limitation for this thesis.

### 6.4. Recommendation for Future Studies

Considering the limitations, this section offers several recommendations for further research.

This study is limited to certain geographical areas and cultural contexts. In addition, because the data were collected online, the sample may be more reflective of families with more stable internet access and digital resources, which may have shaped the socio-economic profile of participants and the digital practices reported. EST might be useful to understand the differences in children's digital play in relation to cultural and geographical contexts, and to examine how different socio-economic and cultural factors affect children's digital play, including the similarities and differences that emerge across these factors. Future research may therefore examine how children's digital play is shaped across more diverse family positions, including migrant and minor communities and cultures, different language backgrounds, and varying socio-economic circumstances, to capture how these factors intersect in shaping access, mediation practices, and meanings of digital play from adults' perspectives.

The focus of child-centred research dates back to the twentieth century (Hendrick, 2003), yet children have often been considered as subjects of studies rather than active participants (Christensen & James, 2017). This suggests that child-centred research is still a recent area (King & Howard, 2014), and further research is needed to understand "digital play" through the active participation of children in the research process. Such work may also benefit from post-digital perspectives that attend to how children's learning and meaning-making extend across digital and non-digital activities in everyday life, rather than treating screen-based engagement as a separate domain. Considering Bronfenbrenner's EST theory, future studies may also examine how wider ecological layers influence children's digital play across different communities, cultures, geographies and different institutional settings to deepen understanding of digital play in ECE and the barriers to integration of DT in ECE.

Furthermore, future studies may also explore the therapeutic aspects of digital play across different ecological layers in EST by investigating:

- how various environments influence therapeutic digital play,

- how these environments contribute to children's socio-emotional development and well-being, and
- how much autonomy children have in different contexts of therapeutic digital play.

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## Appendices

### Appendix A. Participant Information Sheet English

PIS PARTICIPANT INFORMATION SHEET

PhD Research Project Title:

The use of technological devices for entertainment and education by preschool children and the potential developmental outcomes for educators, parents, and children in Turkey

Contact Information

Hasan Gökçeoğlu

[redacted]

Supervisor

Dr. Peter King

[redacted]

1. What is the purpose of the study?

The aim of this study is to understand the use of technological devices for entertainment and education by children in early childhood and their potential developmental outcomes.

2. Why have I been chosen?

You have been chosen because you live in Turkey and are a parent or caregiver of a child/children aged 3–6.

3. What will happen if I take part?

Data will be collected anonymously. Your personal details and IP address will remain confidential.

4. Is participation voluntary and what happens if I change my mind later?

Once the study is completed, data will be automatically recorded in the system, and it will not be possible to withdraw your data.

5. Are there any disadvantages of taking part?

There are no foreseeable disadvantages as your data will be protected.

6. Are there any benefits of taking part?

This PhD study will contribute to the growing body of research on children's use of digital devices.

7. Will my participation be kept confidential?

Yes, your personal information and IP address will be kept confidential.

PIS Data Protection and Privacy

Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR) 2016. All information collected about you will be kept strictly confidential. Your data will only be accessible to the researcher/research team and will not be shared with third parties. All electronic data will be stored in a password-protected computer file in a secure location. All printed records will be kept in a locked file cabinet in a secure location. To reduce the risk in case of a data breach, consent forms will be stored separately from your responses. Information collected for our study will be anonymised after consent forms are received, and participant names will be removed within 24 hours by assigning an ID number. Therefore, if you wish to withdraw from the study at a later date, it will not be possible to identify your data. Please inform us before completing the interview if you wish to withdraw.

Data Protection Privacy Notice

The data controller for this project is Swansea University. The University Data Protection Officer, responsible for overseeing data processing activities, can be contacted via the Vice-Chancellor's Office. Your personal data will be processed for the purposes outlined in this information sheet. In accordance with standard ethical procedures, your consent to participate will be obtained by completing the consent form provided. The legal basis for processing your personal data is that it is necessary for the performance of a task carried out in the public interest. This public interest has been approved by the Swansea University Research Ethics Committee of the Faculty of Humanities and Health Sciences. The legal basis for processing special categories of data is that it is necessary for reasons of public interest, scientific or historical research purposes, or statistical purposes.

What are your rights?

You have the right to access, rectify, erase, restrict, and object to the processing of your personal data. For more information about your rights, please visit the University's Data Protection web pages. Requests or objections should be made in writing to the University Data Protection Officer:

- University Compliance Officer (FOI/DP)

Vice-Chancellor's Office

Swansea University

Singleton Park

Swansea

SA2 8PP

Email: dataprotection@swansea.ac.uk

How do I make a complaint?

If you have a complaint about the processing of your personal data, you should first contact the University Data Protection Officer using the information above. If your complaint is not resolved, you have the right to lodge a complaint with the Information Commissioner's Office:

- Information Commissioner's Office,

Wycliffe House, Water Lane, Wilmslow,

Cheshire, SK9 5AF

www.ico.org.uk

What if I have other questions?

If you have any other questions about the study, please feel free to contact us.

PIS

1. I understand that my participation in the study is voluntary and that I will not be able to withdraw my data after completing the survey.
2. I understand my role in the study and that all my questions have been satisfactorily answered.
3. I understand that the data I provide will be securely stored.

4. I understand that the information I provide may be used anonymously in academic studies and research results.
5. I consent to the processing of my personal data by the researchers for the purposes explained in the Participant Information Sheet.

I agree (1)
I do not agree (2)

**Appendix B. Participant Information Sheet Turkish**

**KATILIMCI BİLGİLERNDİRME FORMU**

**Doktora Araştırma Projesi Başlığı:**

Okul öncesi çağındaki çocukların teknolojik cihazları eğlence ve eğitim amaçlı kullanımı ve Türkiye'deki eğitimciler, ebeveynler ve çocuklar açısından olası gelişimsel sonuçları

**İletişim Bilgileri**

Hasan Gökçeoğlu
[redacted]

**Danışman**

Dr. Peter King
[redacted]

**1. Çalışmanın amacı nedir?**

Bu çalışmanın amacı, erken çocukluk döneminde çocukların teknolojik cihazları eğlence ve eğitim amaçlı kullanımı ve bunların olası gelişimsel sonuçlarının anlaşılmasıdır.

**2. Neden ben seçildim?**

Türkiye'de yaşadığınız ve 3–6 yaş arası bir çocuğun/çocukların ebeveyni veya bakıcısı olduğunuz için seçildiniz.

**3. Katılırsam ne olacak?**

Veriler 'isimsiz' olarak toplanacaktır. Kişisel bilgileriniz ve IP adresiniz gizli kalacaktır.

**4. Katılım gönüllülük esasına mı dayalı ve daha sonra katılmaktan vazgeçersem ne olacak?**

*Çalışmayı tamamladıktan sonra veriler otomatik olarak sisteme kaydolacağından verileri geri çekme şansınız olmayacaktır.*

**5. Katılımın olası dezavantajları neler?**

Verileriniz korunacağı için bu çalışmaya katılmanın olası bir dezavantajı bulunmamaktadır.

**6. Katılımın olası yararları neler?**

Doktora programı kapsamında yapılan bu çalışma, çocukların dijital cihazları kullanımı ile ilgili sayıları artan araştırma çalışmalarına katkı sağlayacaktır.

**7. Çalışmaya katılımım gizli tutulacak mı?**

Evet, kişisel bilgileriniz ve IP adresiniz gizli tutulacaktır.

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KBF ***Veri Koruma ve Gizliliği***

*Verileriniz, 2018 Veri Koruma Yasası ve 2016 Genel Veri Koruma Yönetmeliği (GDPR) uyarınca işlenecektir. Hakkınızda toplanan tüm bilgiler mutlak suretle gizli tutulacaktır. Verileriniz sadece araştırmacı/araştırma ekibi tarafından görüntülenecektir. Verileriniz üçüncü taraflarla paylaşılmayacaktır.*

*Tüm elektronik veriler, parola ile korunan bir bilgisayar dosyasında, güvenli bir yerde saklanacaktır. Tüm basılı kayıtlar, güvenli bir yerde kilitli bir klasör dolabında saklanacaktır. Herhangi bir veri ihlali durumunda riskin azaltılması için onam bilgileriniz, yanıtlarınızdan ayrı şekilde saklanacaktır. Çalışmamız için topladığımız bilgiler, onam formlarının alınmasından sonra isimsiz hâle getirilecek, katılımcılara bir*

*kimlik numarası atanarak görüşme tamamlandıktan sonra 24 saat içinde isimlerin gizliliği sağlanacaktır. Bu sebeple, çalışmadan çekilmek isterseniz daha sonraki bir tarihte kimliğinizi tanımlamak ve verilerinizi silmek mümkün olmayacaktır. Dolayısıyla bu araştırmanın sonunda verilerinizi geri çekmeye karar verirseniz lütfen görüşmeyi sonlandırmadan önce bizi bilgilendirin.*

***Veri Koruma Gizlilik Bildirimi***

*Bu projenin veri sorumlusu Swansea Üniversitesidir. Kişisel verilerin işlenmesine ilişkin üniversite faaliyetlerinin denetimini sağlayan Üniversite Veri Koruma Sorumlusuna Rektör Yardımcılığından ulaşılabilir. Kişisel verileriniz, bu bilgilendirme formunda özetlenen amaçlar doğrultusunda işlenecektir.*

*Standart etik prosedürler kapsamında, size verilen onam formunun doldurulması suretiyle bu çalışmaya katılımınız için onamınız alınacaktır.*

*Kişisel verilerinizi işlememizin yasal dayanağı, kamu yararına gerçekleştirilen bir görevin yerine getirilmesi için işlemenin gerekli olmasıdır. Söz konusu kamu yararı gerekçesi, Swansea Üniversitesi Beşeri Bilimler ve Sağlık Bilimleri Akademisi Araştırma Etik Kurulu tarafından onaylanmıştır.*

*Özel veri kategorilerini işlememizin yasal dayanağı, kamu yararı, bilimsel veya tarihsel araştırma amaçları veya istatistiksel amaçlarla arşivleme için işlemenin gerekli olmasıdır.*

***Haklarınız nelerdir?***

*Kişisel bilgilerinize erişme, kişisel bilgilerinizin işlenmesine itiraz etme, kişisel bilgilerinizi düzeltme, silme, kısıtlama ve değiştirme hakkına sahipsiniz. Haklarınızla ilgili daha fazla bilgi için Üniversitemizin Veri Koruma web sayfalarını ziyaret edebilirsiniz. Konuyla ilgili talep veya itirazlarınız, yazılı olarak Üniversite Veri Koruma Sorumlusuna bildirilmelidir:*

*-University Compliance Officer (FOI/DP)*
*Vice-Chancellor's Office*
*Swansea University*
*Singleton Park*

*Swansea*
*SA2 8PP*
*E-posta: dataprotection@swansea.ac.uk*

***Nasıl şikâyette bulunurum?***

*Kişisel verilerinizin işlenmesi ile ilgili bir şikâyetiniz varsa öncelikle yukarıda verilen bilgileri kullanarak Üniversite Veri Koruma Sorumlusu ile iletişime geçebilirsiniz. Şikâyetiniz çözümlenmezse karara bağlanması için doğrudan Bilgi Komisyonerine başvurma hakkına sahipsiniz. Bilgi Komisyoneri iletişim bilgileri:*
*-Information Commissioner's Office,*
*Wycliffe House, Water Lane, Wilmslow,*
*Cheshire, SK9 5AF*
*www.ico.org.uk*

***Başka sorularım varsa ne olacak?***

*Bu çalışma ile ilgili başka sorularınız varsa çekinmeden bizimle iletişime geçebilirsiniz.*

---

KBF 1. Çalışmaya katılımımın gönüllü olduğunu ve anketi tamamladıktan sonra verileri geri çekemeyeceğimi anladım.
2. Çalışmadaki rolümü anladım ve bütün sorularım tatmin edici şekilde cevaplandı.
3. Çalışma için sağlamış olduğum verilerin güvenli bir şekilde depolandığını anladım.
4. Sağlamış olduğum bilgilerin akademik çalışmalarda ve araştırma sonuçlarında 'isimsiz' bir şekilde kullanılabileceğini anladım.

5. Araştırmacıların kişisel verilerimi Katılımcı Bilgilendirme Formunda açıklanan çalışma amaçları doğrultusunda işlemesini kabul ediyorum.

- ○ Onaylıyorum (1)
- ○ Onaylamıyorum (2)

**Appendix C. Survey Questions English**

S1 What is your relationship to the child?

- o Father (1)
- o Mother (2)
- o Stepfather (3)
- o Stepmother (4)
- o Caregiver (5)
- o Other (Please specify) (6)

_____

Page Break

S2 What is the gender of your child?

- o Girl (1)
- o Boy (2)

Page Break

S3 How old is your child?

- o Under 1 year old (1)
- o Older than 1, younger than 2 (2)
- o Older than 2, younger than 3 (3)
- o Older than 3, younger than 4 (4)
- o Older than 4, younger than 5 (5)
- o Older than 5, younger than 6 (6)
- o 6 years old or older (7)

Page Break

S4 How did the COVID-19 pandemic affect your child's time spent with digital devices?

- o Increased (1)
- o Decreased (2)
- o No effect (3)
- o I don't know (4)

Page Break

S5 How many hours per week does your child use the following digital devices?

Never (1) Less than 1 hour (2) 1–2 hours (3) 2–3 hours (4) 3–4 hours (5) 4 hours or more (6) I don't know (7)

- o Television (1)
- o Tablet (2)
- o Smartphone (3)
- o Computer (4)
- o Game Console (5)
- o E-book (6)
- o Other (Please specify) (7)

Page Break

S6 How many hours per week does your child use each of the following applications?

Never (1) Less than 1 hour (2) 1–2 hours (3) 2–3 hours (4) 3–4 hours (5) 4 hours or more (6) I don't know (7)

- o Gaming Apps (1)

- o Literacy Apps (2)
- o Creative Apps (3)
- o Math Apps (4)
- o E-book Apps (5)
- o Drawing Apps (6)
- o Memory Apps (7)
- o Social Media Apps (8)
- o Other (Please specify) (9)

Page Break

S7 How many hours per week does your child spend on the following activities using digital devices?

Never (1) Less than 1 hour (2) 1–2 hours (3) 2–3 hours (4) 3–4 hours (5) 4 hours or more (6) I don't know (7)

- o Playing games (1)
- o Watching videos (2)
- o Drawing (3)
- o Recording video/audio (4)
- o Remembering (5)
- o Learning (6)
- o Calculating (7)
- o Creating (8)
- o Reading (9)
- o Communicating (10)
- o Other (Please specify) (11)

Page Break

S8 How important are the opinions of the following people when deciding which applications or activities your child uses on digital devices?

Not important at all (1) Slightly important (2) Moderately important (3) Very important (4) Extremely important (5) I don't know (6)

- o Child's own decision (1)
- o Parents (2)
- o Teachers (3)
- o Siblings (4)
- o Other relatives (Please specify) (5)

Page Break

S9 How frequently is your child engaged with digital devices in the following locations?

Never (1) Occasionally (2) Sometimes (3) Often (4) Always (5) I don't know (6)

- o School (1)
- o Home (2)
- o Outside (3)
- o Car (4)
- o Playground (5)
- o Dining Table (6)
- o Bed (7)
- o Other (Please specify) (8)

Page Break

S10 Who participates in your child's digital experiences and how often?

Never (1) Occasionally (2) Sometimes (3) Often (4) Always (5) I don't know (6)

- o No one (1)
- o Parents (2)
- o Siblings (3)
- o Teachers (4)
- o Friends (5)
- o Other relatives (Please specify) (6)

Page Break

S11 What do you think is the effect of your child's "educational" digital activities on the following developmental areas?

No effect (1) Positive (2) Negative (3) I don't know (4)

- o Social Development (1)
- o Physical Development (2)
- o Cognitive Development (3)
- o Language Development (4)
- o Emotional Development (5)

Page Break

S12 What do you think is the effect of your child's "recreational" digital activities on the following developmental areas?

No effect (1) Positive (2) Negative (3) I don't know (4)

- o Social Development (1)
- o Physical Development (2)
- o Cognitive Development (3)
- o Language Development (4)
- o Emotional Development (5)

## Appendix D. Survey Questions Turkish

S1 Çocukla yakınlık dereceniz nedir?

- o Baba (1)
- o Anne (2)
- o Üvey Baba (3)
- o Üvey Anne (4)
- o Bakıcı (5)
- o Diğer (Lütfen belirtiniz) (6)

_____

Page Break

S2 Çocuğun cinsiyeti nedir?

- o Kız (1)
- o Erkek (2)

Page Break

S3 Çocuğunuz kaç yaşında?

- o 1 yaşından küçük (1)
- o 1 yaşından büyük 2 yaşından küçük (2)
- o 2 yaşından büyük 3 yaşından küçük (3)
- o 3 yaşından büyük 4 yaşından küçük (4)
- o 4 yaşından büyük 5 yaşından küçük (5)
- o 5 yaşından büyük 6 yaşından küçük (6)
- o 6 yaşında veya daha büyük (7)

Page Break

S4 Pandeminin (Covid) çocuğunuzun dijital teknolojik aletlerle geçirdiği zamana nasıl etkisi oldu?

- o Arttı (1)
- o Azaldı (2)
- o Etkilemedi (3)
- o Bilmiyorum (4)

Page Break

S5 Çocuğunuz aşağıdaki teknolojik aletlerin her birini haftada kaç saat kullanıyorlar?

Hiç (1) 1 saatten daha az (2) 1-2 saat (3) 2-3 saat (4) 3-4 saat (5) 4 saat veya daha fazla (6) Bilmiyorum (7)

- o Televizyon (1)
- o Tablet (2)
- o Akıllı Telefon (3)
- o Bilgisayar (4)
- o Oyun Konsolları (5)
- o Elektronik Kitap (6)
- o Diğer (Lütfen belirtiniz) (7)

Page Break

S6 Çocuğunuz aşağıda belirtilen uygulamaların her birini haftada kaçar saat kullanıyor?

Hiç (1) 1 saatten daha az (2) 1-2 saat (3) 2-3 saat (4) 3-4 saat (5) 4 saat veya daha fazla (6) Bilmiyorum (7)

- o Oyun Uygulamaları (1)
- o Okuma/Yazma Uygulamaları (2)
- o Yaratıcı Uygulamalar (3)
- o Matematik Uygulamaları (4)
- o Elektronik Kitap Uygulamaları (5)
- o Çizme/Boyama Uygulamaları (6)
- o Hafıza Uygulamaları (7)
- o Sosyal Medya Uygulamaları (8)
- o Diğer (Lütfen belirtiniz) (9)

Page Break

S7 Çocuğunuz teknolojik aletleri kullanarak aşağıda belirtilen aktivitelerin her biri için haftada kaç saat harcıyor?

Hiç (1) 1 saatten daha az (2) 1-2 saat (3) 2-3 saat (4) 3-4 saat (5) 4 saat veya daha fazla (6) Bilmiyorum (7)

- o Oyun oynamak (1)
- o Bir şeyler izlemek (2)
- o Çizim yapmak (3)
- o Video/ses kaydı yapmak (4)
- o Hatırlamak (5)
- o Öğrenmek (6)
- o Hesap yapmak (7)
- o Bir şeyler yaratmak (8)
- o Okumak (9)
- o İletişim kurmak (10)
- o Diğer (Lütfen belirtiniz) (11)

Page Break

S8 Çocuğunuzun teknolojik aletleri kullanırken hangi uygulamaları kullanacağına veya faaliyetlerde bulunacaklarına karar vermesinde aşağıdaki tarafların görüşleri ne kadar önemlidir?

Hiç önemli değil (1) Biraz önemli (2) Orta derecede önemli (3) Çok önemli (4) Son derece önemli (5) Bilmiyorum (6)

- o Çocukların kendi kararları (1)
- o Anne-baba (2)
- o Öğretmenler (3)
- o Kardeş(ler) (4)
- o Diğer yakınlar (Lütfen belirtiniz) (5)

Page Break

S9 Çocuğunuz aşağıdaki alanların her birinde teknolojik cihazlarla ne sıklıkta meşgul olurlar?

Hiçbir zaman (1) Ara sıra (2) Orta sıklıkla (3) Çoğu zaman (4) Her zaman (5) Bilmiyorum (6)

- o Okul (1)
- o Ev (2)
- o Dışarı (3)
- o Araba (4)
- o Oyun Parkı (5)
- o Yemek masası (6)
- o Yatak (7)
- o Diğer (Lütfen belirtiniz) (8)

Page Break

S10 Çocuğunuzun dijital deneyimine kimler ne sıklıkla katılırlar?

Hiçbir zaman (1) Ara sıra (2) Orta sıklıkla (3) Çoğu zaman (4) Her zaman (5) Bilmiyorum (6)

- o Hiç kimse (1)
- o Anne ve baba (2)
- o Kardeş(ler) (3)
- o Öğretmen(ler) (4)
- o Arkadaş(lar) (5)
- o Diğer yakınlar (Lütfen belirtiniz) (6)

Page Break

S11 Çocuğun dijital cihazlarla yaptıkları "eğitimsel" aktivitelerin, aşağıdaki gelişim alanlarına nasıl etkisi olduğunu düşünüyorsunuz?

Etkisi yok (1) Olumlu (2) Olumsuz (3) Bilmiyorum (4)

- o Sosyal Gelişimi (1)
- o Fiziksel Gelişimi (2)
- o Zihinsel Gelişimi (3)
- o Dil Gelişimi (4)
- o Duygusal Gelişimi (5)

Page Break

S12 Çocuğun dijital cihazlarla yaptıkları "boş zaman" aktivitelerin, aşağıdaki gelişim alanlarına nasıl etkisi olduğunu düşünüyorsunuz?

Etkisi yok (1) Olumlu (2) Olumsuz (3) Bilmiyorum (4)

- o Sosyal Gelişimi (1)
- o Fiziksel Gelişimi (2)
- o Zihinsel Gelişimi (3)
- o Dil Gelişimi (4)
- o Duygusal Gelişimi (5)

Page Break

## Appendix E. Interview Participant Information Sheet and Content Form English

### PARTICIPANT INFORMATION SHEET

**PhD Research Project Title:**

Pre-school children's recreational and educational engagement with technological devices and its potential developmental outcomes in Turkey from the perspective of practitioners, parents, and children

**Contact Details:**

Hasan Gokceoglu
937513@swansea.ac.uk

**Supervisior**
Dr Peter King
p.f.king@swansea.ac.uk

Who is carrying out the research?

Hasan Gokceoglu (The researcher, Ph.D. student at Swansea University)

**1.What is the purpose of the study?**

The study aims to understand children's recreational and educational engagement with technological devices in early childhood and its potential developmental outcomes.

**2. Why have I been chosen?**

You are chosen since you are practitioner in pre-school, or you are parent of children aged between 3 and 6 and you are living in Turkey.

**3. What will happen to me if I take part?**

Your name and personal information will not be used and published. You will be

interviewed with researchers and will be recorded. Your audio or video record will be stored in researcher's personal computer with password. Your recording will be deleted after Ph.D. is awarded and will not be used further.

**4. Is participation voluntary and what if I wish to later withdraw?**

You will have your right to withdraw a week after your participation.

**5. What are the possible disadvantages of taking part?**

There is no potential disadvantage for taking part in the study since your data will be protected.

**6. What are the possible benefits of taking part?**

The study is part of Ph.D. and will contribute to the growing research on children's digital engagement.

**7. Will my taking part in the study be kept confidential?**

Yes, your personal information will be confidential.

Data Protection and Confidentiality

*Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation 2016 (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team. Data will not be shared with 3rd parties.*

*All electronic data will be stored on a password-protected computer file in a secure location. All paper records will be stored in a locked filing cabinet in a secure location. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach. Please note that the data we will collect for our study will be made anonymous, following collection of consent forms, participants will be assigned an ID number, ensuring anonymity within 24 hours post interview closure. Thus, it will not*

*be possible to identify and remove your data at a later date, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before you leave.*

Data Protection Privacy Notice

*The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office. Your personal data will be processed for the purposes outlined in this information sheet.*

*Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.*

*The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the College of Human and Health Sciences Research Ethics Committee, Swansea University.*

*The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.*

***What are your rights?***

*You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights. Any requests or objections should be made in writing to the University Data Protection Officer: -*

*University Compliance Officer (FOI/DP)*
*Vice-Chancellor's Office*
*Swansea University*
*Singleton Park*
*Swansea*
*SA2 8PP*

*Email: dataprotection@swansea.ac.uk*

***How to make a complaint***

*If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above. If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -*

*Information Commissioner's Office,*
*Wycliffe House, Water Lane, Wilmslow,*
*Cheshire, SK9 5AF*
*www.ico.org.uk*

What if I have other questions?

*If you have further questions about this study, please do not hesitate to contact us.*

**Participant Consent Form**

Name and Contact Details:

| | | **Participant Initials** |
|---|---|---|
| 1. | I (the participant) confirm that I have read and understood the information sheet for the above study (dated ) which is attached to this form. | |
| 2. | I understand that my participation is voluntary and that I am free to withdraw a week after participation, without giving any reasons. | |
| 3. | I understand what my role will be in this research, and all my questions have been answered to my satisfaction. | |

| | | |
|---|---|---|
| 4. | I understand that I am free to ask any questions at any time before and during the study. | |
| 5. | I have been informed that the information I provide will be safeguarded. | |
| 6. | I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs. | |
| 7. | I am willing for my information to be audio or video recorded via Zoom/Skype etc. | |
| 8. | I have been provided with a copy of the Participant Information Sheet. | |
| 9. | I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet. | |

**Thank you for your participation in this study. Your insight is very much appreciated.**

| | | |
|---|---|---|
| _____ | _____ | _____ |
| *Print name of researcher* | *Signature* | *Date* |
| _____ | _____ | _____ |
| *Print name of participant* | *Signature* | *Date* |

This study is being conducted by Swansea University, Department of Education and Childhood Studies.

When complete: Original copy for the participant, one copy to be retained by the researcher.

## Appendix F. Interview Participant Information Sheet and Content Form Turkish

### KATILIMCI BİLGİLENDİRME FORMU

**Doktora Araştırma Projesi Başlığı:**

Okul öncesi çağındaki çocukların teknolojik cihazları eğlence ve eğitim amaçlı kullanımı ve Türkiye'deki eğitimciler, ebeveynler ve çocuklar açısından olası gelişimsel sonuçları

**İletişim Bilgileri**

Hasan Gökçeoğlu
937513@swansea.ac.uk

**Danışman**
Dr. Peter King
p.f.king@swansea.ac.uk

Araştırmayı kim yürütüyor?

Hasan Gökçeoğlu (Araştırmacı, Swansea Üniversitesinde doktora öğrencisidir.)

**1. Çalışmanın amacı nedir?**

Bu çalışmanın amacı, erken çocukluk döneminde çocukların teknolojik cihazları eğlence ve eğitim amaçlı kullanımı ve bunların olası gelişimsel sonuçlarının anlaşılmasıdır.

**2. Neden ben seçildim?**

Türkiye'de yaşadığınız ve 3–6 yaş arası çocuk gruplarıyla profesyonel olarak çalıştığınız için seçildiniz.

**3. Katılırsam ne olacak?**

Adınız ve kişisel bilgileriniz kullanılmayacak ve yayımlanmayacaktır. Araştırmacı ile

yapacağınız görüşme kayıt altına alınacaktır. Sesli ve görüntülü kaydınız araştırmacının parola ile korunan kişisel bilgisayarında saklanacaktır. Doktora tamamlandıktan sonra kayıtlarınız silinecek ve başka bir şekilde kullanılmayacaktır.

**4. Katılım gönüllülük esasına mı dayalı ve daha sonra katılmaktan vazgeçersem ne olacak?**

Katıldıktan bir hafta sonraya kadar çalışmadan çekilme hakkına sahipsiniz.

**5. Katılımın olası dezavantajları neler?**

Verileriniz korunacağı için bu çalışmaya katılmanın olası bir dezavantajı bulunmamaktadır.

**6. Katılımın olası yararları neler?**

Doktora programı kapsamında yapılan bu çalışma, çocukların dijital cihazları kullanımı ile ilgili sayıları artan araştırma çalışmalarına katkı sağlayacaktır.

**7. Çalışmaya katılımım gizli tutulacak mı?**

Evet, kişisel bilgileriniz gizli tutulacaktır.

Veri Koruma ve Gizliliği

*Verileriniz, 2018 Veri Koruma Yasası ve 2016 Genel Veri Koruma Yönetmeliği (GDPR) uyarınca işlenecektir. Hakkınızda toplanan tüm bilgiler mutlak suretle gizli tutulacaktır. Verileriniz sadece araştırmacı/araştırma ekibi tarafından görüntülenecektir. Verileriniz üçüncü taraflarla paylaşılmayacaktır.*

*Tüm elektronik veriler, parola ile korunan bir bilgisayar dosyasında, güvenli bir yerde saklanacaktır. Tüm basılı kayıtlar, güvenli bir yerde kilitli bir klasör dolabında saklanacaktır. Herhangi bir veri ihlali durumunda riskin azaltılması için onam bilgileriniz, yanıtlarınızdan ayrı şekilde saklanacaktır. Çalışmamız için topladığımız bilgiler, onam formlarının alınmasından sonra isimsiz hâle getirilecek, katılımcılara bir*

*kimlik numarası atanarak görüşme tamamlandıktan sonra 24 saat içinde isimlerin gizliliği sağlanacaktır. Bu sebeple, çalışmadan çekilmek isterseniz daha sonraki bir tarihte kimliğinizi tanımlamak ve verilerinizi silmek mümkün olmayacaktır. Dolayısıyla bu araştırmanın sonunda verilerinizi geri çekmeye karar verirseniz lütfen görüşmeyi sonlandırmadan önce bizi bilgilendirin.*

Veri Koruma Gizlilik Bildirimi

*Bu projenin veri sorumlusu Swansea Üniversitesidir. Kişisel verilerin işlenmesine ilişkin üniversite faaliyetlerinin denetimini sağlayan Üniversite Veri Koruma Sorumlusuna Rektör Yardımcılığından ulaşılabilir. Kişisel verileriniz, bu bilgilendirme formunda özetlenen amaçlar doğrultusunda işlenecektir.*

*Standart etik prosedürler kapsamında, size verilen onam formunun doldurulması suretiyle bu çalışmaya katılımınız için onamınız alınacaktır.*

*Kişisel verilerinizi işlememizin yasal dayanağı, kamu yararına gerçekleştirilen bir görevin yerine getirilmesi için işlemenin gerekli olmasıdır. Söz konusu kamu yararı gerekçesi, Swansea Üniversitesi Beşeri Bilimler ve Sağlık Bilimleri Akademisi Araştırma Etik Kurulu tarafından onaylanmıştır.*

*Özel veri kategorilerini işlememizin yasal dayanağı, kamu yararı, bilimsel veya tarihsel araştırma amaçları veya istatistiksel amaçlarla arşivleme için işlemenin gerekli olmasıdır.*

***Haklarınız nelerdir?***

*Kişisel bilgilerinize erişme, kişisel bilgilerinizin işlenmesine itiraz etme, kişisel bilgilerinizi düzeltme, silme, kısıtlama ve değiştirme hakkına sahipsiniz. Haklarınızla ilgili daha fazla bilgi için Üniversitemizin Veri Koruma web sayfalarını ziyaret edebilirsiniz. Konuyla ilgili talep veya itirazlarınız, yazılı olarak Üniversite Veri Koruma Sorumlusuna bildirilmelidir:*

*-University Compliance Officer (FOI/DP)*
*Vice-Chancellor's Office*
*Swansea University*
*Singleton Park*
*Swansea*

*SA2 8PP*

*E-posta: dataprotection@swansea.ac.uk*

***Nasıl şikâyette bulunurum?***

*Kişisel verilerinizin işlenmesi ile ilgili bir şikâyetiniz varsa öncelikle yukarıda verilen bilgileri kullanarak Üniversite Veri Koruma Sorumlusu ile iletişime geçebilirsiniz. Şikâyetiniz çözümlenmezse karara bağlanması için doğrudan Bilgi Komisyonerine başvurma hakkına sahipsiniz. Bilgi Komisyoneri iletişim bilgileri:*

*-Information Commissioner's Office,*

*Wycliffe House, Water Lane, Wilmslow,*

*Cheshire, SK9 5AF*

*www.ico.org.uk*

Başka sorularım varsa ne olacak?

*Bu çalışma ile ilgili başka sorularınız varsa çekinmeden bizimle iletişime geçebilirsiniz.*

**Katılımcı Onam Formu**

Adı ve İletişim Bilgileri:

| | | **Katılımcının Adı ve Soyadının Baş Harfleri** |
|---|---|---|
| 2. | (Katılımcı olarak) yukarıda belirtilen, forma ekli ( tarihli) çalışmaya ilişkin bilgi formunu okuduğumu ve anladığımı onaylıyorum. | |
| 10. | Katılımımın gönüllülük esasına dayandığını ve herhangi bir gerekçe göstermeksizin katıldıktan sonra bir hafta içinde çalışmadan çekilebileceğimi anladım. | |

| | | |
|---|---|---|
| 11. | Bu araştırmadaki rolümü anladım ve sorduğum tüm sorulara tatmin edici yanıtlar aldım. | |
| 12. | Çalışmadan önce ve çalışma sırasında istediğim soruyu sorabileceğimi anladım. | |
| 13. | Verdiğim bilgilerin korunacağı bana bildirildi. | |
| 14. | Bilgilerimin (isimsiz olarak) akademik makalelerde ve diğer formel araştırma çıktılarında kullanılmasını kabul ediyorum. | |
| 15. | Bilgilerimin Zoom/Skype vb. araçlarla sesli veya görüntülü kaydının alınmasını kabul ediyorum. | |
| 16. | Katılımcı Bilgilendirme Formunun bir kopyası bana verildi. | |
| 17. | Araştırmacıların kişisel verilerimi Katılımcı Bilgilendirme Formunda açıklandığı gibi çalışmanın amaçları doğrultusunda işlemesine onay veriyorum. | |

**Bu çalışmaya katıldığınız için teşekkür ederiz. Katkılarınız çok değerlidir.**

_____

*Araştırmacının adı soyadı* *İmza* *Tarih*

_____ _____ _____

*Katılımcının adı soyadı* *İmza*

*Tarih*

Bu çalışma, Swansea Üniversitesi Eğitim ve Çocukluk Çalışmaları Anabilim Dalı tarafından yürütülmektedir.

Doldurulduktan sonra: Aslı katılımcı tarafından, bir kopya ise araştırmacı tarafından saklanacaktır.

## Appendix G. Practitioners' Semi-Structured Interview Questions

### Practitioners Interview Questions

1. Can you tell me about yourself? What is your role at the school?
2. In your opinion, how do children use digital devices in their daily lives?
3. How do you think children use technological devices during their leisure time?
4. How do you think children use technological devices for educational activities?
5. In your opinion, how much control do children have in their interactions with digital devices? What are the factors that guide or restrict them?
6. To what extent do you think parents or other adults have control over children's digital experiences?
7. How do you think children's leisure-time activities with digital devices contribute to their learning and development?
8. How do you think children's educational activities with digital devices contribute to their learning and development?
9. How do you think children's leisure-time activities with digital devices contribute to their creativity?
10. How do you think children's educational activities with digital devices contribute to their creativity?
11. In your opinion, how can technology be integrated into early childhood education?
12. What kind of challenges might be encountered in integrating technology into early childhood education?
13. Is there anything else you would like to add?

## Appendix H. Parents' Semi-Structured Interview Questions

### Parent Interview Questions

1. Can you tell me about yourself?
2. In your opinion, how do children use digital devices in their daily lives?
3. How do you think children use technological devices during their leisure time?
4. How do you think children use technological devices for educational activities?
5. In your opinion, how much control do children have in their interactions with digital devices? What are the factors that guide or restrict them?
6. To what extent do you think parents or other adults have control over children's digital experiences?
7. How do you think children's leisure-time activities with digital devices contribute to their learning and development?
8. How do you think children's educational activities with digital devices contribute to their learning and development?
9. How do you think children's leisure-time activities with digital devices contribute to their creativity?
10. How do you think children's educational activities with digital devices contribute to their creativity?
11. Is there anything else you would like to add?