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# YOUNG CHILDREN (0-8) AND DIGITAL TECHNOLOGY

*A Qualitative Exploratory Study - National Report - DENMARK*

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# 1. Executive Summary

Danish children are among the heaviest digital media users in Europe. More than 90 % of children under the age of seven have access to a tablet in the home[1]. Danish parents are encouraging and engaged - yet also, to some extent, concerned when it comes to their children's use of digital technology.

On one hand, parents are very aware of the possible positive outcomes of children's use of technology with regard to both everyday practices and the digital skills they achieve. On the other hand, they do not want their children to spend too much time with various sorts of media, and they encourage other sorts of play activities. Even though some/many parents in the sample focus on formal educational outcomes from children's media use, the media are more often seen as a means for relaxation and fun than for educational purposes. Moreover, in most families in the sample, media are used for shared family activities, e.g., watching films or playing games together. However, in all families, children (are also allowed to) use digital technologies on their own - either in their rooms or in the living room with their parents nearby. Some children, for instance, also use the iPad in the presence of other adults - for example, grandparents, who may have different rules and regulations regarding its use.

Children are active users of apps as well as streamed content via Netflix and YouTube. They also consume content (streamed television as well as apps) provided by the Danish Broadcasting Corporation (DR), which is held in high esteem by parents. Most 'television' viewing among children in the sample is actually digital, streamed content, and the iPad[2] is their first choice of platform for this as well as for playing games, listening to music, etc.

Children who are 6-7 years old rarely own their own iPad. However, all the children in the sample have had access to one or more - usually their parents' or a joint “family iPad”. Either the parents have bought the iPad themselves, or they have been given one at work, which they can also use at home. In most cases, children are allowed to use it as well. Some of them are capable of downloading apps themselves, and they allowed to - usually, with the restriction that they can only download free apps. This is not a very common practice, however. For most of the children in the sample, use of the iPad is limited to the apps that are already downloaded and, as such, selected and approved by the parents. In families with older siblings, children generally have access to a greater variety of content (be it apps, games, or YouTube content). Moreover, children with older siblings are more likely to be early adopters of technology. In some of the Danish families, children started using the iPad before the age of 2.

Children from divorced families may have only limited access to iPads, for instance, if they are only found in the home of one of their parents. This does not seem to be a concern for the children, however; it is simply a condition they accept. As such, one may conclude that digital, mobile media are not (yet) personal tools for the children (even though some of them have a great desire to own their own iPad or smartphone). They use them whenever they

[1] The DR media research department's annual report on the use of electronic media in Denmark, p. 26.

[2] We will use the term 'iPad' synonymously with the term 'tablet'. All children in the sample had access to a tablet; only one of them had a tablet of a different brand than Apple's iPad. Furthermore, the common term for tablets has become 'iPad' among Danish children - both generally and in the specific case in this study.

can and are allowed to. However, when they cannot, they play with other toys and tools just as much. One child in the study specifically switched between watching YouTube Minecraft videos (on a laptop) at his father's house and playing Minecraft on the iPad at his mother's house. He uses the videos as inspiration for his own gaming and, thereby, cultivates his interest in Minecraft beyond his actual gaming practice.

Apps are the iPad feature most commonly used by children. Danish content from DR is especially popular, but English-language apps from TocaBoca or Dr Panda are also popular. The children rarely access the Internet via a browser - some of them explicitly state that they do not know what Google Chrome and Safari, for example, are for. Therefore, their knowledge of the concept of 'the Internet' is mainly focused on whether or not they have access to Wi-Fi and can, therefore, use the apps they like and/or watch the films or TV shows they want. As such, the Internet is a non-concrete concept for the children in the study. They do “surf the net” to look up information about their likes or interests; but these practices are always parent-mediated, and the children are not necessarily aware that information comes from Internet sites and not from the computer or iPad itself.

The technological skills and interests among the 6-7-year-old children vary a great deal across the families interviewed. One parameter determining this may be the presence of older siblings. Another seems to be gender: boys generally seem slightly more interested in technology, i.e., gaming. When it comes to technological skills, whether they are high or low, most of the parents interviewed say that their children are “self-taught”, and the observational part of the sample also seems to suggest that most children navigate, for instance, iPads, Sony PlayStations or ghetto blasters quite handily.

Children's use of technology may generally be described as mostly passive, resembling old-fashioned television viewing. Some of them participate in gaming, and few of them engage with technologies more creatively. Among the more creative uses commonly found are Minecraft, taking photos, and drawing. In one of the families, the parents and children play together with small, programmable robots and other sorts of technology.

## Key findings

- Danish children are heavy users of digital media. Their parents encourage this use even though they may have some concerns regarding time usage and specific content.
- Parents are aware that issues regarding online behaviour and safety will be relevant for their children - at a later age. At this point, they find their children's use of digital technologies mostly unproblematic.
- Parents are generally pragmatic in their regulation of children's use of digital media and technologies. They encourage their use for relaxation and for fun.
- The iPad is the most commonly used (and preferred) technology among all the children in the study. Apps are the most common tools for gaming, streaming, and browsing.
- Children under the age of 8 are rarely 'online'; they use online content, but they do not often engage in practices such as online gaming or social networking. This should be kept in mind with respect to the formulation of policies and recommendations.

- 'The Internet' is a non-concrete issue for the children in the study. They may be aware of whether they have Wi-Fi access or not; but they do not consider the Internet to be a 'space', and they do not use it for communication.
- Broadcast television is becoming less important for the families in the sample. Most of the children's television (and film) viewing is streamed content - often, via apps such as Netflix and Ramasjang[3] or via YouTube (app or webpage).

# Challenges and Recommendations (Including Implementation Proposals and Practical Proposals)

## 1. Recommendations to Policymakers

Children under the age of 8 are most often 'local' users of media and technology. They use the iPad - and similar platforms - to download, play, and watch specific content, but they rarely upload things or communicate with others through social network sites (SNS), etc. From the age of 8 and onwards, this changes; and policies regarding the youngest children should, therefore, have a twofold purpose. First, they should focus on providing and distributing high-quality content targeted at the specific age group, and they should focus on information and education directed at parents, teachers, and pedagogues working with children under 8. Second, policies should also focus on providing knowledge and digital skills to young children as well as their parents and caregivers in order not only to prepare children (and parents) for the tween and teen years but also to create the foundations for a broad media- and technology-related education for future generations.

In this respect, a primary focus area should be strategies aimed to encourage children and young people to become creators and co-creators of digital content and technologies, not merely consumers. This area is currently underdeveloped but should play a central part in future empowerment strategies within the field of media literacy.

## 2. Recommendations to Industry

In Denmark, public service institutions such as DR (Danish Broadcasting Corporation) play a significant role in providing online content to young children. This should be developed further, just as public service providers and private companies should work together with the shared aim of developing and distributing high-quality content - in Danish - to children and families. Even though Denmark is a very small language area, the study shows that children make use of at least a certain number of 'Danish language' games and apps. The app from DR's Ramasjang channel has been downloaded nearly 1 million times, according to DR's own figures. On one hand, this proves that the public service tradition in Denmark is strong, but it also points to the fact - also backed up in the interview data - that Danish parents encourage their children to use apps with content that they find qualitatively acceptable. To most parents in the study, quality means that the content is not only

[3] Ramasjang is a television channel, a webpage, and an app distributed by the Danish Broadcasting Corporation (DR) and aimed at 3-7 year olds. There is a similar channel, including a webpage, aimed at 7-12 year olds, called Ultra. Both channels are tax-funded and non-commercial, and both channels (like DR as a whole) must live up to certain public service obligations including the obligation to offer daily news, both broadcast and online, for children in the oldest age group.

appropriate but also, in some sense, stimulating. This could be traditional educational content but is equally understood to include other kinds of content with good storylines, characters, or other forms of 'nutritional' content. Industries should take into consideration the fact that parents want this kind of content and that they need guidance and knowledge in this area.

## 3. Recommendations to Parents and Caregivers

Children under the age of 8 are relatively heavy users of digital media and technologies. New digital and mobile platforms, such as the iPad, and new online services, such as YouTube and Ramasjang, provide even the youngest children with new options and possibilities for accessing and viewing a wide range of content as well as ways to navigate and choose content that were unheard of only five years ago. Until the introduction of technologies such as the iPad, the opportunities for young children to navigate and choose content on their own were limited to the use of DVDs and/or online content via browsers. This study shows that children mainly use digital technologies in a passive way - for instance, to watch streamed TV content or short video clips on YouTube. Most children also play simple games in apps, etc., but only a very few children use digital technologies for communicative and creative purposes.

Parents should engage with children's media and technology use. All parents in this study do so, and children and parents make use of media together (watching films or TV or playing games together). Still, digital media could be made useful for many other purposes; and, with some guidance (for instance, from schools, libraries, or industries), parents may also engage in other activities related to digital technologies with their children. Some examples may be taking photos, creating pictures, films, or books, or playing games that are challenging for both children and adults. Being actively engaged in children's media use is a good platform for guiding and developing media literacy when children become older and more actively engaged in online activities.

## 4. Recommendations to Schools, Libraries, and Other Institutions

Most children in Denmark have access to and are active users of digital media and technologies. In spite of this, their use is often rather passive - primarily, TV viewing and pre-installed games. Given this, schools, libraries, and other institutions may contribute a wide range of opportunities to develop more diverse and, perhaps, also more interesting media skills among both children and parents. As part of their ICT strategy, schools could implement creative and innovative uses of technologies, and libraries to an even wider extent could provide creative spaces in which ICT and media technologies could be explored in more nuanced ways.

Furthermore, schools, libraries, and other institutions have an important role to play in providing knowledge and information to parents with regard to the possibilities and challenges of children's media use as well as concrete knowledge, tips, and tricks with regard to interesting apps and games. Libraries have an especially important role to play as a knowledge hub; they could guide parents and caregivers and provide the opportunity and setting for parents and children to encounter and explore new media and technology together.

# 2. Introduction: Danish Children and Digital Technology

Danish children are among the heaviest users of media and digital technologies in Europe. This report seeks to investigate how Danish children between the ages of 0 and 8 (with a special focus on 6-to-7-year-olds) use and engage in activities with digital media in the home. How do Danish children perceive and understand the technologies that they use on a daily basis? How do they engage with these technologies? What are their preferred activities and media content? How do their parents feel about their use of technology? And what benefits and challenges do parents associate with their young children's online activities?

The study is conducted in the framework of the JRC's Project ECIT, Empowering Citizens' Rights in emerging ICT (Project n. 572). ECIT deals with "Identification of new threats to children by ICT besides social networks. Development of recommendations to empower children's rights by preventing and mitigating these emerging issues through education, school and community co-vigilance, as well as reconciliation of digital and personal interactions".

Research focusing on the benefits and challenges associated with children's use of the Internet has, so far, mainly targeted 9-16 years old (see, for example, the EU Kids Online research carried out since 2006). Yet, research shows that children are going online at an increasingly younger age. However, "young children's lack of technical, critical and social skills may pose [a greater] risk" (Livingstone et al., 2011, p.3). In spite of the substantial increase in usage by very young children, research seems to be lagging behind. Therefore, research targeting 0-8 years old and which explores the benefits and risks of their online engagement is imperative.

In collaboration with a selected group of academic partners in different European countries, the present study is a qualitative study that aims at exploring young children and their families` experiences with new technologies. In particular, we will look at their (online) technological engagement as well as the potential benefits and risks associated to their (online) interactions with new technologies. Its results will serve as a basis for policy recommendations[4] and what should be looked at when launching larger EU studies on the benefits and challenges associated to young children`s use of new (online) technologies.

The aim of our research is to generate data to address the overall question, in what ways, if any, are children and/or their families empowered by the use of new (online) technologies? In other words, what benefits or risks can be identified from the research, regarding young children's use of digital technologies at home?

This study is guided by four overall research questions, which taken together provides a framework for understanding some very crucial and interesting aspects of young children's everyday life in the 21st Century:

- **RQ 1: How do children under the age of 8 engage with new (online) technologies?**
- **RQ 2: How are new (online) technologies perceived by the different family members?**
- **RQ 3: What role do these new (online) technologies (smartphones, tablets, computers, video games, apps, etc.) play in the children's and parents' lives (separately and in relation to family life in general)?**

[4] In the framework of the EU agenda for the Rights of the Child (2011) and the European Strategy for a Better Internet for Children (2012).

- **RQ 4: How do parents manage their younger children's use of (online) technologies (at home and/or elsewhere)? Are their strategies more constructive or restrictive?**

4 topics or dimensions have been identified (USE, PERCEPTIONS/ATTITUDES, INDIVUDUAL CONTEXT, FAMILY CONTEXT) and linked to the 4 main RQ. This was framed as follow:

| | INDIVIDUAL CONTEXT | FAMILY CONTEXT |
|---|---|---|
| USE | RQ 1:<br>Individual Use: children/parents | RQ 3:<br>Family Use/Dynamics/Practices |
| PERCEPTIONS/ATTITUDES | RQ 2:<br>Awareness to risks/opportunities<br>• of the children<br>• of the parents | RQ 4: Parental Mediation<br>• Passive/active<br>• Restrictive/permissive<br>• Implicit/explicit<br>• Reverse mediation |

## 2. Family Portrait Gallery

| Family code | Member Code | Low –medium-high family income | Ethnicity | Sex | Age | Year school/max. level of education | Profession of parents |
|---|---|---|---|---|---|---|---|
| DK1 | DK1f38 | Medium | Danish | m | 38 | Tertiary | Team leader at the local municipality |
| DK1 | DK1m40 | Medium | Danish | f | 40 | Tertiary | Development consultant at library |
| DK1 | DK1g6 | Medium | Danish | f | 6 | Primary | |
| DK1 | DK1b4 | Medium | Danish | m | 4 | Kindergarten | |
| DK2 | DK2f34 | High | Danish | m | 34 | Tertiary | Works with IT |
| DK2 | DK2m31 | High | Danish | f | 31 | Tertiary | Lecturer |
| DK2 | DK2b6 | High | Danish | m | 6 | Primary | |
| DK2 | DK2b9 | High | Danish | m | 9 | Primary | |
| DK3 | DK3f34 | Medium | Danish | m | 34 | Tertiary | Insurance controller |
| DK3 | DK3m32 | Medium | Danish | f | 32 | Tertiary | Graduate in Human Nutrition |
| DK3 | DK3g6 | Medium | Danish | f | 6 | Primary | |
| DK3 | DK3g3 | Medium | Danish | f | 3 | Kindergarten | |
| DK4 | DK4f37 | Medium | Danish | m | 37 | Tertiary | Engineer |
| DK4 | DK4m35 | Medium | Danish | f | 35 | Tertiary | Teacher |
| DK4 | DK4b5 | Medium | Danish | m | 5 | Primary | |
| DK4 | DK4b8 | Medium | Danish | m | 8 | Primary | |
| DK5 | DK5f44 | High | Danish | m | 44 | Tertiary | Chief of communication with the government |
| DK5 | DK5m36 | High | Danish | f | 36 | Tertiary | Special consultant with the government |
| DK5 | DK5g5 | High | Danish | f | 5 | Primary | |
| DK6 | DK6f32 | Medium | Danish | m | 32 | Secondary | Employee at SIEMENS |
| DK6 | DK6m32 | Medium | Danish | f | 32 | Tertiary | Student |
| DK6 | DK6g6 | Medium | Danish | f | 6 | Primary | |
| DK6 | DK2g2 | Medium | Danish | f | 2 | Kindergarten | |
| DK7 | DK7m33 | Medium | Danish | f | 33 | Tertiary | Teacher |
| DK7 | DK7b6 | Medium | Danish | m | 6 | Primary | |
| DK8 | DK8f37 | Medium | Danish | m | 37 | Tertiary | Innovation employee at a cultural institution |
| DK8 | DK8b6 | Medium | Danish | m | 6 | Primary | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DK9 | DK9g6 | Medium | Danish | f | 6 | Primary | |
| DK9 | DK9m30 | Medium | Danish | f | 30 | Tertiary | Health care consultant for a municipality |
| DK9 | DK9sf28 | Medium | Danish | m | 28 | Tertiary | Engineer |
| DK10 | DK10b6 | Medium | Danish | m | 6 | Primary | |
| DK10 | DK10g3 | Medium | Danish | f | 3 | Kindergarten | |
| DK10 | DK10m35 | Medium | Danish | f | 35 | Tertiary | Works with unemployed youth |
| DK10 | DK10m35 | Medium | Danish | f | 35 | Tertiary | Works at an auction house |

# Family DK 01

Aarhus, Denmark

### Family members

- Benny, DK1f38
- Lene, DK1m40
- Nanna, DK1g6, Primary school
- Mads, DK1b4, Kindergarten

### Narrative

Family 1 consists of four members. The father, Benny, is 38 years old and works as team leader for the local municipality; and the mother, Lene, is 40 years old and works as a development consultant. Together, they have a girl, Nanna (6), who attends primary school, and a boy, Mads (4), who is in kindergarten.

> "I love playing with the iPad because you don't have to talk to anybody while playing." – Nanna, 6 years old

Nanna likes playing with classic toys such as dolls, and she loves to climb trees. However, she also loves the iPad. Alongside the family's gaming console, the iPad is the device the girl would miss the most if it were taken away from her. The children do not have an iPad of their own but can use two of the three iPads the family possesses. The children use the iPad for 30-60 minutes a day on average. The parents have taught the children how to unlock the iPad, but the girl has obtained the rest of her skills from a friend or by herself. She plays as often as she is allowed. There are not many strict rules in the family about when she and her brother may use the iPad. So, she is almost always allowed to use it. When she wants to play with the iPad, she asks her parents, and they nearly always let her use it except around bedtime and on weekday mornings. When she is not allowed to play with it, she usually gets angry; and, when a conflict arises, the iPad may be taken away as a punishment.

Apart from playing different games on the iPad, she watches television on the Netflix app and the Danish Broadcasting Corporation's children channel's app, Ramasjang., There are rules about what she is allowed to watch on Netflix. She is not allowed to watch "teenage content" since her parents find it silly and not age-appropriate. In general, the parents believe it is important for their children to learn from the games they play but acknowledge that there has to be room for fun as well. "Teenage content" is, in fact, the content that interests Nanna the most. She describes it as something that contains characters who are in the 9th or 10th grade. Therefore, she sometimes watches it anyway. Because she has not yet learned to spell, she navigates through the content by looking at the pictures in the app - for example, looking for teenagers on the cover pictures of Disney shows. She does not mention specific titles; she just describes them as 'something teenage'. Her inability to spell also limits her when it comes to obtaining new apps. When she wants something new for the iPad or has trouble figuring something out, she asks her parents for help.

If her parents see her watching teenage content or other content that, in their view, is not age-appropriate, they ask her to watch something else or they take the iPad away from her.

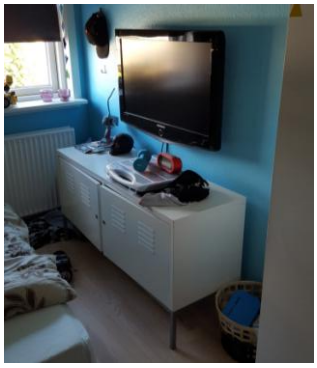
In other words, there are rules concerning content but not time consumption. The children are allowed to turn on iPads, etc., when they come home from school, for example, and play with them for as long as they want - not as a babysitter but because the parents believe the children use it to unwind. The girl emphasises this by saying that she often plays with the iPad when she is tired. She states that she loves playing with the iPad because you do not need to talk to anybody while playing, and she likes that she can play by herself.

According to Nanna, using the iPad is just like playing with other sorts of toys. When the girl is with her friends, they sometimes use the iPad in a game. According to the girl, this is an example of when you *have* to talk to each other. In addition, it is very important for the mother that Nanna learns how to engage in play by herself without being dependent on having an electronic device in her hands.

Although there are no specific rules regarding media use, it is important to the parents that the children know about and use a broad spectrum of media - e.g., that they know how to read books. The girl knows how to use a smartphone to take pictures/record videos, dial emergency calls, and text her friend (primarily, emojis) from one parent's phone to another parent's phone. The parents believe it is very important for their children to be able to navigate on iPads and, later, computers, etc. The girl was around two years old when she used an iPad for the first time, whereas the boy was closer to a year old. The 6-year-old girl does not know what the Internet is, but she sometimes asks her parents to look something up on the iPad/iPhone.

The children have never experienced anything dangerous when using iPads apart from seeing something too scary. On the contrary, the family relates several positive incidents that occurred when they were using the iPads - e.g., playing games on it together. However, the parents are certain that, when the children get older and start using social network sites, they will become much more attentive to their children's online behaviour and whereabouts.

# Family DK 02



Aalborg, Denmark

### Family members

- Jens, DK2f34
- Mette, DK2m31
- Mathias, DK2b6, Primary school
- Alexander, DK2b9, Primary school

### Narrative

Mathias is 6 years old and lives together with his older brother Alexander, age 9, his mother Mette (31), and his father Jens (34). Mathias attends the first year of primary school, while Alexander is in the 3rd grade. Mathias loves playing with the iPad and became acquainted with it when he was around 2-2.5 years old. His absolute favourite toy is LEGO. Mathias also participates in different leisure activities, such as swimming classes, and enjoys playing outside. Mathias has learned a lot about how to use the iPad from Alexander, and he knows about various sorts of content, rules in games, and so forth. Mathias uses the iPad to relax, to play with friends and family, and to gain inspiration for physical play - for instance, with RC cars. He and his brother watch YouTube videos with RC cars and build tracks for their own cars in the living room.

> "I believe we are a bit different from other parents. We are really relaxed and look upon the kids' use of media as a natural thing" – Mette, 31 years old

The family has 3 televisions. The boys have one in each of their rooms, but one of them does not work. The 3rd television is in a living room. The children may watch both the functioning televisions. Mette, Jens, and Alexander each have their own smartphone. Alexander uses his only to dial his parents when he is walking home from school. The family also possesses 3 iPads. One is for all family members to use; one is the mother's work iPad; and Alexander has his own, which he has been given at school. The children may use any iPad they like. In addition, both Mette and Jens have their own laptops, which the children may not use. However the boys have a stationary computer they may use as much as they like. Last but not least, the family has a Nintendo Wii, which they do not use much.

The parents have never used "playing with the iPad" as a reward but have occasionally used the iPad as a babysitter in the car. Often, the parents play together with the children - for instance, Minecraft - on either the iPad or the computer. The father prefers a computer to the iPad, which he describes - not in a very positive tone - as a "natural extension" of his children. The father works in the IT industry, and the mother is a lecturer. The parents are frequent users and believe that technology and media are a natural part of their lives and the lives of others.

Both children use the iPad/computer every day, and there are no strict rules concerning the time they spend on electronic devices except that electronic devices may not normally be used on weekday mornings unless the boys are up early and have enough time. In general, the parents are more concerned with content. So far, it has not been necessary to lay down rules about time consumption since the children are good at regulating the use themselves.

The children are not allowed to watch bloody or scary content - e.g., the computer game GTA. The two boys are quite skilled, for instance, when it comes to browsing YouTube. By looking at the cover pictures, they quickly assess the content and decide whether it is something they are allowed or, perhaps, not allowed to watch, although they may be inclined to do so anyway. In addition, the parents have rules on downloading apps. Generally speaking, the children may only download free apps, and they are not always happy about this. Sometimes, the parents have encouraged the children to use educational apps, but these apps do not interest them much. Both children like YouTube, and Alexander actually has his own YouTube Profile. The parents are concerned about the content on YouTube and prefer Netflix, which they consider a safer environment for children. Mathias does not know what the Internet is but associates the iPad with looking up information. When the children get older and start using SNS, the parents intend to become much more attentive to their children's online presence, since online bullying concerns them a great deal.

# Family DK 03

Skanderborg, Denmark

## Family members

- Kasper, DK3f34
- Nina, DK3m32
- Cecilie, DK3g6, Primary school
- Thea, DK3g3, Kindergarten

## Narrative

6-year-old girl Cecilie lives with her sister Thea (3 years old), her mother Nina, who is 32 years old, and her father, Kasper (34 years old). The father works as an insurance controller, and the mother has a master's degree in human nutrition but is currently on maternity leave. Cecilie is in her first year of primary school, and her sister attends kindergarten. Cecilie loves playing, and one of her favourite activities is drawing. Apart from that, she participates in spare time activities such as swimming.

> "The girls definitely get inspired by playing some of their games on the iPad and then making up 'real' games from it" – Nina, 32 years old

Each of the parents has a smartphone, and the children may use their father's smartphone but not their mother's. The mother uses her phone a lot and does not want the children to use it, too. In additional, the family possesses a private laptop, the father's work laptop, two televisions, and one iPad. The family sometimes goes to the cinema, although not often. Apart from their father's phone, the only technologies used by the two girls are the television in the living room and the iPad. The family has only had their iPad for around a year. So, the first device Cecilie explored was her father's iPhone when she was around 3 years old. On the television, Cecilie watches the Danish children's channel Ramasjang and *Disney Show*, which is broadcast every week. Cecilie uses the iPad every day to watch Ramasjang and Netflix and to play games. The best thing about using the iPad, she says, is playing games. Cecilie also uses the iPad to take pictures. When searching for content on Netflix, for example, she looks at the pictures related to each programme. Since she cannot spell, she is very limited when it comes to downloading new apps. Usually, her parents are in charge of what is installed on the iPad, but Cecilie can make suggestions. She is aware that she is not allowed to download apps that are not for free. Cecilie does not know what the Internet is.

The children are not allowed to turn on the iPad or any other devices on weekday mornings. Cecilie uses the iPad to relax, and there are no specific rules concerning time consumption. She usually uses it for around 10-30 minutes. She likes Netflix the best; and, because the girls always look for cartoons, the parents have no restrictions here. Cecilie is not allowed to use the iPad when she has friends visiting.

Before she started school, the parents had a rule that Cecilie had to play a game with some sort of educational content at least 10-15 minutes before playing or watching something

else. In general, the parents are fondest of apps that have a learning aspect because they find that much of the content on iPads does not encourage children to think. The children do not watch YouTube, which suits the mother very well because she believes it is harder to supervise the content on YouTube. Sometimes, the parents use the iPad as a babysitter, and they sometimes deny access to the iPad as a punishment when the children behave inappropriately.

The parents believe the iPad and electronic devices are a natural part of growing up today, but they also feel that they sometimes play too big a part since the most important thing for them is that children learn how to play. They believe that their children are very good at playing on their own and use what they learn from playing with the iPad in their physical games. When Cecilie grows older, gets her own phone, and begins to engage in other activities than playing games and watching Netflix, the mother definitely wants to investigate what goes on. The mother is concerned about issues such as paedophilia when Cecilie learns how to spell and can begin to search and browse the Internet.

# Family DK 04

Skanderborg, Denmark

### Family members

- Søren, DK4f37
- Lise, DK4m35
- Silas, DK4b5, Primary school
- Oliver, DK4b8, Primary school

### Narrative

> "Sometimes, my brother and I sit with our iPads and play Minecraft together."
>
> - Silas, five years old

The family consists of Silas, who is 5 years old (almost 6), his older brother Oliver, who is 8 years old, their mother (35), and their father (37). Both boys are in primary school. The mother works as a teacher, specialising in early primary school children, and the father is an engineer. Silas engages in many different activities in his spare time and loves playing outdoors. Often, he plays by himself before seeking out his iPad. He enjoys playing with LEGOs and playing with the iPad. His favourite app is Netflix on which he mostly watches short movies and series such as *Star Wars*. Sometimes, he takes photos and records videos.

The family has a television in the living room, a television on the upper floor (which they do not use very often), three computers, a Nintendo Wii, a PlayStation, 3 iPads (a shared iPad, the fathers' work iPad, and an iPad that the older brother has been given at school and is allowed to bring home). The family got their first iPad shortly after it was released. Apart from that, the mother and father each have an iPhone, whereas the oldest son has a less high-tech telephone, which can only be used as a regular phone (for dialling). Often, the two brothers play Minecraft together on each of their iPads. In general, the two brothers like playing with the iPad and the computer and watching television. The older brother helps Silas quite a bit, and they learn how to use the iPad from each other. Because of his older brother, Silas started watching *Star Wars* on Netflix at a younger age than his brother. Silas uses the iPad around 30-90 minutes a day, and he usually tries to do something else after playing with it for 60-90 minutes. Sometimes, the boys play with the iPad when they have friends over. Their parents have noticed that the boys often play in real life what they play on the iPad.

According to the mother, the parents are very strict about what the boys can and cannot do. This is because the parents believe children should play and develop their imagination. They talk a lot to their children about the restrictions, and it is very important to the parents that the children know that the iPad/PC play is not reality. Both of the children accept that they are not allowed to do certain things, but Silas likes to push boundaries. The children are not allowed to watch television or use the iPad or other electronic devices on weekday mornings. If they have spare time, they may play by themselves. After returning home from school, they may use electronic devices for 60 minutes. To make sure this rule is followed, they turn on a timer. On the weekend, the children have to do their homework

before they may use the iPad/PC/TV. There are rules concerning which apps they are allowed to download. The boys are not allowed to download non-free apps. Unlike his older brother, Silas cannot download apps himself and needs help if he finds an app he wants. The mother has introduced the rule that, when the children are not allowed to use the phone, for example, the adults may not use their phones, either.

There are also rules about content. For example, the boys may not watch films or play games that have blood and violence. The parents think watching YouTube videos is another way of watching television, but they are not sure what the children actually make of it. Unlike his older brother, Silas does not know what the Internet is but associates the iPad with the ability to look up information. Sometimes, the family uses the Internet together to look things up, which surprises them. Sometimes, the iPad is used as a babysitter when the parents need some peace and quiet. Moreover, the parents believe that the children use the iPad to relax. The parents are sure that the children learn things from these media. As the children get older, the parents will talk to them about using social media, but the discussion about restrictions, options, and so forth is seen as an on-going daily process.

# Family DK 05

Copenhagen, Denmark

### Family members

- Morten, DK5f44
- Anja, DK5m36
- Clara, DK5g5, Primary school

### Narrative

Family 05 consists of Clara, age 5, her mother Anja (36), and her father Morten (44). The parents are divorced, and Clara lives in turns with her mother and her father. In her spare time, she likes swimming, reading books, and drawing. She is good at playing by herself, too, and rarely uses the iPad every day. Both parents attended the interview, which took place in the mother's apartment.

> "I wish I had my own phone, so I could make calls and play anytime I wanted." – Clara, five years old

At her mother's place, there is a television and an iPad, whereas her father has an iPad and a television connected to a DVD but with no antenna or cable access. Both parents have a smartphone and a laptop. Clara likes looking at pictures on her mother's phone. When she uses her father's iPad, she may only watch television (including YouTube); and, when she uses her mother's, she may play apps and watch television. On weekdays, she uses it around 30 minutes a day; and, on weekends, she uses it around 60-90 minutes a day. Some weeks, she uses the iPad much more than others, depending on what she is engaged with in her play. She has used an iPad since the age of 3-3½.

Clara uses the iPad to watch television and play games. She uses the Ramasjang app a lot to watch programmes and to play games. She does not find it hard to get to know a new game, she says. When she is at her father's, they watch a lot of Japanese cartoons on DVD, which she can operate herself. In general, she watches more movies at her father's. Often, they watch YouTube videos with her, and then she dances. She cannot browse YouTube content on her own. She can unlock the iPad and possesses basic user skills related to the iPad. This she has taught herself - or, perhaps, she has been taught by some of her friends. Her parents are not sure about that. Sometimes, she uses the iPad to record role-playing in which she engages with her friends. The parents like it when Clara and her friends use the iPad for that kind of play, when they use their imagination. In general, the mother likes it when there is an element of learning and interaction involved with the iPad use. So, it is not just a passive toy. Still, the parents do not download or encourage the use of educational apps although they believe Clara would probably like them. Clara does not know how to use Netflix, either. As a result, the parents are not concerned about what is available there.

Both parents use their smartphones a lot at work and, therefore, find it important to set some guidelines regarding smartphone use in the home. They try to follow the same rules they lay down for their daughter. They often use the iPad to look things up; and the father has tried to talk to Clara about the Internet, but she does not know what it is. Sometimes,

she asks whether they can look something up on the iPad. They never use playing with the iPad as punishment/reward. They believe that she learns motor coordination, language skills, and social rules (e.g., taking turns) from using the iPad.

Generally speaking, the rules and regulations for Clara's use of media and technology are not very strict. Sometimes, she is not allowed play with the iPad, however, and the parents have sometimes found that it is easier for Clara to accept a 'no' before she starts playing than during play. They once used the mother's phone as a babysitter for her while driving somewhere on holiday. It was an easy solution; and, when they got home, they had to break her of the new habit.

The mother believes Clara likes the phone more because it is easier for her to handle, due to its physical size. Clara is inspired by what her friends are playing on their iPads and, sometimes, tells her parents that she wants a certain app. She is not allowed to download for-pay apps. She does not know how to download apps from the App Store; and, since she cannot spell, she is pretty limited in her ability to search for content.

What concerns the parents most is privacy issues, online bullying, and the use of Facebook in general. Because of these concerns, Clara has not been allowed to have a smartphone yet. When she gets older, they will try to educate her about how to behave online and on social media. They have a positive view of the use of ICT but dislike it when the use of electronic devices becomes dominant and hinders children's ability to entertain themselves in other ways.

# Family DK 06

Aalborg, Denmark

### Family members

- Rasmus, dk5f32
- Sanne, dk5m32
- Alberte, dk6g6, Primary school
- Sofia, dk6g2, Kindergarten

### Narrative

Six-year-old Alberte lives with her younger sister Sofia (age 2), her mother (32), and her father (also 32). Alberte loves drawing, playing with Barbie dolls, and playing in the family's swing set in the garden.

> "She hasn't really paid that much attention to the iPad. Sometimes, I think we want her to use it more than she does" – Sanne, 32 years old

The family has one television; each of the parents has a smartphone. They have one PlayStation that is being used as a media centre, one stationary computer, a laptop, and two iPads of which one belongs to Alberte. She began using the iPad when she was around 5½ years old, which means that it is still very new to her. Apart from watching television for about one hour a day, Alberte uses her iPad to watch Netflix, to watch shows and play games on Ramasjang, and to play games. She likes to watch *Barbie* the most but also to take photos and to play game apps. Her parents taught her to unlock the iPad; but, apart from that, she is self-taught. She needs help when she wants a new app. She is very careful and frequently asks her parents about what to do - for example, when it says something in English, and she asks for permission every time she wants to use it.

In general, Alberte uses the iPad to relax. Therefore, she is not that interested in the educational apps, unlike her mother. Alberte's mother sometimes encourages her to use apps with a learning aspect, and they have also practiced with English on YouTube. The mother prefers to download for-pay apps, as they are not filled with advertisements and so forth. Alberte uses the iPad and watches television irregularly. In some periods, she uses it frequently; and, at other times, she does not even think about it.

Since she cannot spell or read, Alberte is very limited in her ability to search for content on Netflix. As a result, there are no rules concerning content yet. In general, there are not that many rules in the home regarding technology because it has not yet been necessary to make rules. This means there are no rules regarding how long she may use the iPad. Alberte does not know what the Internet is, but she knows you can look for information there. Sometimes, she asks her parents to find videos on YouTube, but she would not be able to figure out YouTube herself. On weekday mornings, the children are not allowed to watch television or use the iPad. Alberte had some difficulty in understanding this at the beginning. Since then, however, she never gets angry if she is not allowed to use the iPad. When she has friends over, they like to play games such as hide-and-seek, and she only asks

for the iPad to watch a movie. When this happens, her mother tells them that she thinks it is better for them to play with each other instead of using the iPad.

The father works at SIEMENS, and the mother is studying to become a teacher. Both parents use the iPad a lot themselves. The father works Friday and Saturday; so, the mother and the two daughters try to get out of the house as much as they can. However, both Friday and Saturday nights have become television nights. The parents have sometimes used the iPad/iPhone as a babysitter, and they ask themselves what their parents did when they were in their situation and did not have the iPad. The parents have talked a bit with Alberte about how to behave online, but they believe they will do so more extensively when she gets her own phone, gets a profile on Facebook, and so on. They are most concerned about Facebook and Alberte having her own phone. When she grows older and starts using social media, they will talk with her more about these matters. Both parents are fond of technology, but they believe that it should not get out of hand. Online technologies are very important for children, and they are impressed by what Alberte can do with iPad herself. However, it is important for the iPad not to take over traditional games and play practices.

# Family DK 07

Aarhus, Denmark


### Family members

- Lisbeth, dk07m33
- Johan, dk07b6, Primary school

### Narrative

Family 7 consists of six-year-old Johan and his mother, Lisbeth (37), who works as a teacher. Johan loves playing football, is generally very active, and likes being outside. His favourite thing is playing football. He would rather play football than play with the iPad.

> "The Internet means that you can go somewhere." – Johan, six years old

The family possesses one television, one smartphone, one iPad (for work), one laptop, one PlayStation (not connected to the Internet), one old Nintendo DS, and a ghetto blaster. At his mother's house, Johan watches television and listens to music in his room. He has tried to make a call from his mother's phone but, apart from that, does not use it. At his fathers' place, he may play on a PlayStation and has his own iPad, which he cannot take with him to his mother's. Johan does not use the computer, but he knows what it is. He can navigate the iPad himself - for example, delete a game that he no longer finds fun, but he needs to ask his father if he wants to download new games. He finds this difficult and does not know the password. There are rules about what can be downloaded. He is not allowed to download English games because they can be too difficult to understand, and only free apps are allowed. He finds it difficult to explain who taught him how to use the devices, but he acknowledges that his older siblings have helped him.

Johan likes YouTube because he can watch things to help him get better at, e.g., football. In the evening, he sometimes watches Netflix. He is aware of the Internet in that he knows you cannot watch Netflix or YouTube if you are not connected to the "Net". He searches for videos on YouTube by just typing random letters or words or by typing a famous football player's name. In addition, he watches a lot of music videos on YouTube. The nice thing about YouTube, according to Johan, is that you can lie in bed and relax with the iPad. Johan associates the iPad with relaxation and says that he uses it when he is tired. He also relaxes by listening to music on his ghetto blaster in his room.

It is important for the mother that her son's use of technology is limited, but there are no strict rules. Once the mother let him watch something when they were ahead of schedule; but, in the following days, he had a hard time accepting this as an isolated exception. There is no specific number of hours that Johan is allowed to use media, but his mother will stop it if he has been doing it for too long. Then, she wants him to start with something else. She believes that the use of media makes people less attentive to the moment. Johan uses media for approximately 1.5-2 hours per day on weekdays and, on weekends, for approximately 2-2.5 hours.

The mother uses her computer and phone, but she believes there have been periods in which she used them too much. She thinks about this a lot since it can affect her son if she is allowed to indulge, but he is not. She often looks things up on the Internet, but she does not consider herself a heavy user of technology.

Johan lives in turns with his mother and father, and there are differences between the two homes. In the beginning, he thought it was sad he could not bring the iPad to his mother's, as he can with the rest of his toys; but the mother is actually happy about it since the device belongs to her ex-husband, and she might see things she does not want to see. Actually, the mother just got an iPad from her job, but Johan does not ask for permission to use it.

In before-and-after-school care, Johan uses an iPad to plays Minecraft and educational apps. At his father's, he sometimes plays football on the iPad. At his father's, he also has siblings: a half-sister who is older than him and a stepbrother, who is around 8-9 years old. At home, he often plays by himself, but he often has friends over both on weekdays and weekends.

Concerning content, it is very important for the mother that there is some kind of learning in it. It does not have to be explicitly educational, but she does not like it when she sees her son watching American teenage series or superficial content in general. She is not a fan of turning off a device just to turn it off. In addition, it is very important for the mother that the content on television is not too scary. She believes there is plenty of time for him to watch those things later on.

The mother and son often watch a programme or a movie together or look at pictures together, which makes media usage a family activity. Apart from that, she believes Johan's use of media is connected to relaxation and fun activities. At the moment, the mother is in charge of deciding what the boy can watch on television and how much time he can spend watching it. In the future, she believes it is even more important to be aware of how much time he spends watching television, playing on the computer and iPad, and so forth.

While the mother prepares their dinner, Johan can either watch television or play football in the yard. Sometimes, they turn on the television again later in the evening before he goes to bed. The mother has used the iPad as a babysitter, for example, when she needs to shower. Actually, she feels guilty about having done this.

# Family DK 08

Aabyhøj, Denmark

### Family members

- Ole, dk8f37
- Lucas, dk8b6, Primary school

### Narrative

Family 08 consists of a boy, Lucas (age 6) and his father Ole (37). The father has a girlfriend with two teenage daughters. Up until now, they have lived as next-door neighbours in separate flats, but they are in the process of moving in together. At Lucas' mother's house, there are two older (half-) siblings, and he also has an adult half-brother. The father works as an innovation employee at a cultural institution. Lucas loves playing with matchbox cars. Often, father and son play together with LEGOs and cars, and the family often watches movies or entertainment shows together.

> "At my mother's, I play with the iPad; and, at my father's, I watch YouTube videos on the computer." – Lucas, six years old

There are four smartphones at Lucas' father's house. Each adult has one, and the older stepsisters do as well. There is also one television and two laptops. At his mother's, he can use an iPad. His father has not felt the need for an iPad and thinks it is too expensive. Lucas never asks for the iPad at his father's, and it seems as if he can do whatever he wishes on the computer. Lucas has primarily learned how to operate different electronic devices on his own. However, his older siblings have shown him shortcuts and tricks for using the iPad, for example. If he wants to download a new app/game, he has to ask his mother. He knows the password for the iPad, but he will not reveal it to grownups. There are different rules at his mother's and his father's house. At his mother's, he can only use electronic devices after dinner while, at his father's, he can use them as soon as he gets home from school. He cannot use electronic devices on weekday mornings. On weekends, he can watch television or Minecraft videos on YouTube.

Lucas makes active use of "recommended videos". He cannot spell. So, his search abilities are limited. Ole limits how much time he can spend on the computer since he rarely stops by himself. Ole encourages his son to use the computer, and he is sure that he uses it for relaxation. The daily consumption varies a lot. Some days, he uses electronic devices for two hours; other days, he uses them for half an hour. There have been times when Ole used the computer as a babysitter, but he does not do so regularly. Lucas is good at playing by himself but better at playing with others, Ole says. Lucas does not participate in spare-time activities, but he likes music. In general, there are no rules regarding the content the boy can watch and consume. Ole believes the mother has more rules on content. The father is not as vigilant as the mother, but he is a bit annoyed by the fact that YouTube keeps suggesting content related to what the son has just seen. This means he is not being

exposed to varied content, the father says, but he does not want to 'panic morally' about content.

Lucas is good at using the iPad, and he watches television on his own. It is a natural extension of his body, the father thinks. He started using the computer at around age four. The boy does not use Netflix on the computer, but the father sometimes finds a movie there they can watch together - or they borrow DVDs from the library to watch together. Ole is certain that Lucas would never ask to use the computer to watch something on Netflix on his own. Sometimes, he has played online games on a website, but Ole thinks it was too boring once Lucas had tried the iPad. The use of electronic devices activates the senses in a fun way, Ole thinks, but Lucas is just as absorbed with other things, such as playing with physical toys.

Sometimes, Lucas uses his father's girlfriend's smartphone to play a game, but he never uses it to take pictures, record videos, etc. Once, he said, "I want to be on the Internet, I want to be on the Internet" when he had his photo taken. Ole's girlfriend then posted the photo on her Facebook profile, commenting that Lucas had asked for it himself. Still, he does not know exactly what the Internet is. It is important to Ole for his son to spend time on other activities than playing with the computer or the iPad. Ole and his girlfriend often use the computer and their smartphones to look up information, but Lucas has never suggested this himself.

Ole thinks that it will become relevant to discuss online behaviour with Lucas when he gets older, but it is not relevant at this time. The two stepsisters are very open when it comes to their online profiles, and this has become a topic of discussion in the family. The father does not consider inappropriate online behaviour as being worse than, for instance, acting out or bullying in the schoolyard. Ole is generally very positive about his son's use of ICT, and he believes that he can learn something from it. He also believes that the boy's use of the different devices can be described with words such as "fun", "cosy", and "imaginative". He is most afraid of such use becoming addictive. The mother and father agree that, when Lucas has been on the iPad or computer for too long, he gets irritated, and this influences his mood. However, the father is not that concerned since he still believes his son has fun with the devices and is fascinated by them. What he is most concerned about is the time he spends on them. The father has experienced this himself when he became stressed from being constantly available on his e-mail.

If Lucas could choose for himself, he would prefer to play with the iPad or computer, to play with cars, and to be outside. The best thing about the iPad is Minecraft, he thinks. Sometimes, the father sees that things he has played with on the iPad/computer are translated into physical games. During the upcoming weekend, Lucas will visit his friend "to mine" - that is, play Minecraft.

# Family DK 09

Aarhus, Denmark

### Family members

- Tommy, dk9sf28
- Katrine, dk9m30
- Signe, dk9g6, Primary school

### Narrative

Family 9 consists of a girl Signe, age 6, her mother Katrine, who is 30 years old, and her stepfather Tommy, who is 28. The mother works as a health consultant, and the stepfather works as an architectural engineer. Signe loves swimming, teddy bears, drawing, and looking after her bird and her rabbit, and she often plays with her friends. She has a great imagination and loves dressing up. Signe also loves playing classic card games, and she often plays UNO with her stepfather.

> "She was not aware of the television until she was 3 years old." – Katrine, 30 years old

The family possesses two smartphones, one iPad, one television, and two laptops. The iPad is shared among all family members. The family goes to the cinema around two times a year but often watches films on Netflix together. More rarely, they watch television. When they watch Netflix, they use the computer because they do not have a smart-TV. Signe uses the iPad to watch TV and programmes on Netflix and to play games. She likes playing when she gets home from school or after dinner. She uses the iPad for around 30 minutes a day, and she enjoys playing an educational app in which she teaches herself letters. Signe watches more television on the weekend - usually, the Danish Broadcasting Corporation's children channel Ramasjang on Saturday and Sunday morning. In some periods, she watches more television. In other periods, she watches more Netflix. In general, the family does not watch traditional flow TV that much. Signe can turn on the TV herself but prefers for others to turn it on or change channels for her. Not until she was 3 years old did Signe become aware of the television. Her mother believes she was rather old before she actually found it fun to watch television.

Signe rarely uses the family's smartphones; but, when she does, it is often during transportation when the wait gets too boring. She has taken photos with her mother's phone, but it is not something she does often. Once, she tried using a laptop, but she does not do that anymore. Sometimes, she uses FaceTime to call her grandparents or simply dials them up on the phone. She can do a lot on the iPad herself; but, sometimes, she forgets the password and is uncertain whether she is pushing the right buttons and so forth. Signe often uses the iPad when she is tired or when her mother and stepfather need to do practical things. However, the adults are often sitting on the sofa next to her, doing their own things while Signe uses the iPad. The mother and stepfather think that Signe's favourite thing is the iPad, but the mother decides what is available on the iPad. Signe never suggests downloading anything herself. Signe was around 5 years old when the family got the iPad. However, her father had an iPad before that, which she tried out the first time

when she was around 2 years old, playing puzzles. The mother does not know how much she uses the iPad at her father's home.

Signe does not know what the Internet is. The family turns off the Internet connection every night. So, Signe knows it can be turned on and off. She also knows that, when it is on, things work and, when it is off, things do not work - e.g., she cannot use certain apps on the iPad when driving in a car.

Her mother believes Signe uses the iPad more at her father's, but they have not talked about specific time regulations. They have their rules, and the father has his. In general, Signe's mother and stepfather have no specific rules - apart from the basic fact that grownups decide. Usually, Signe asks permission before using the iPad. Sometimes, when she has spent a lot of time on the iPad, her mother and stepfather ask her to stop. In general, Signe accepts this. There has not been any need to lay down specific rules regarding content.

Signe's mother and stepfather believe that online technologies are more important to them than they are to Signe. They see online technologies as positive in that they can watch a movie together and choose when and what they want to watch. However, the mother sometimes thinks that technology can stand in the way of real communication. She does not think her daughter is engaged with the world when she uses electronic devices, but she acknowledges that there needs to be room for it. The mother is more concerned about her daughter's future use of the Internet and social media. In particular, she is concerned about paedophilia.

# Family DK 10

Aarhus, Denmark

### Family members

- Thomas, dk10f35
- Pernille, dk10m35
- Victor, dk10b6, Primary school
- Iben, dk10g3, Kindergarten

### Narrative

> "The most important thing is for him to become a good human being. The other stuff he can learn as time goes on." – Pernille, 35 years old

The family consists of Victor, who is 6 years old, his little sister, Iben (3), and their parents, who are both 35 years old. The mother works as a project manager, and the father works at an auction house. Victor loves playing with his friends, and his favourite leisure time activity is swimming. The family possesses 2 televisions, 1 PlayStation, 2 smartphones, and 3 laptops of which two are the parents' work computers. Victor just recently got his own tablet (an ASUS) for his sixth birthday. It was a present from his grandparents on both his mother's and father's side. They gave him the tablet, so he could use it for school as well. He was quite overwhelmed when he opened the present and saw the tablet, and he knew that it was a large gift. Victor's mother wants to make a rule that he must use some sort of educational app before he can play whatever he wants. So far, Victor only uses the tablet for watching television and taking photos, and there are only few apps on the tablet.

The family has a CD player, which both children can turn on themselves. Victor especially likes listening to Danish children's songs. The family does not watch broadcast television, and they do not have cable television. Instead, they watch Netflix and HBO on their smart TV or on the computer. Both Victor and Iben love watching television, which is a method of relaxation for them. Not until he was 3-4 years old did Victor become interested in watching television, but now the parents appreciate the approximately hour-long break this offers. Naturally, Iben started watching television at an earlier age.

In his after-school care, Victor sometimes plays on the computer, for instance FIFA. When he gets home, he plays with his toys or plays games on the PlayStation, which he loves. Generally, Victor plays many different games on his PlayStation. He also watches television - sometimes, on his new tablet. After dinner, he is not allowed to watch television. His favourite channel is the Danish Broadcast Corporation's children channel Ramasjang or the streaming channel Netflix. In addition to watching a lot of Netflix and Ramasjang, Victor is also a heavy YouTube user. He uses his father's phone or his new tablet to watch different YouTube channels. Sometimes, he ends up watching random videos in foreign languages. Victor does not always register this himself; but, when his mother finds him watching

videos he cannot understand, she tells him to change the channel and helps him go back to where he started or puts on something else of relevance.

Victor has tried calling his cousin on the phone, but he gets bored easily when using the phone. Once, Victor and a friend called one of his father's contacts by mistake because they pressed random buttons on the father's smartphone.

On weekdays, Victor uses electronic devices for around an hour. On weekends, he uses media approximately 3 hours a day if his parents let him. He likes watching television on Saturday and Sunday morning, but the children do not turn it on themselves, which suits the parents. If Victor has a friend over, they usually get permission to watch something after they have played a while. Nobody in the family watches television or uses other electronic devices on weekday mornings. In the afternoon, the parents do not use their phones. This is not a resolute choice, but they find it hard to be engaged if they are also using their phones. At some point, the mother made a decision to delete the Facebook app from her phone because she found that she used it too much. Both the mother and father make use of technology at work.

Rules regarding social media use are not yet relevant, and the parents believe one must behave online as one does in life: do not bully others, and be nice. The most important thing for the parents is for their son to become a good human being. The other stuff he can learn as time goes on. Of course, it will be relevant to talk about online safety when he gets older and starts using the Internet. It is important for the parents that their children play, come up with and create their own ideas, and activate themselves. The parents believe that their son should be able to use a computer and go online, but they are aware that he will not gain those skills from them since they are not that tech-savvy. At this point, Victor does not know what the Internet is, and he has had a hard time understanding that the television does not work when the Internet does not connected.

# 3. Findings

## 3.1 How Do Children under the Age of 8 Engage with New (Online) Technologies?

Children are active users. *iPads* are found in all the families interviewed (albeit, in some divorced families, only with one of the parents), and they are the preferred technology for almost all the children in the study. In one of the families, the 6-year-old boy owns a tablet, but he calls it an iPad.

In addition, *personal computers* (laptops as well as stationary) and *consoles* (such as PlayStation or Wii) are used for gaming but only to a limited extent and only in families with older siblings (ages 8-10).

*Smartphones* are used but generally not possessed by the children. In some families, older siblings have one. They are generally given to children when they begin to walk (or bicycle) home from school on their own. The primary child informants in the sample do not do this yet.

Only a few of the children watch broadcast television their own, and they most often watch television on the iPad. The concept of 'television' covers both streamed (or live) content from, for instance, DR/Ramasjang or commercial channels as well as online content from Netflix, etc. In the majority of families, children choose streamed television content over flow TV. As one child expresses it, "On the TV, you can't know what will be shown. You just have to watch whatever is on" (Family 08 DK). Children are used to having a choice when it comes to content - even when they do not have an iPad or access to Netflix, for instance, they often prefer watching a DVD over 'just' watching flow TV.

Some of the families go to the cinema quite often - all children in the sample have been to the cinema at least a couple of times. Most children are aware of motion pictures such as Disney's *Frozen* or Pixar's *Inside Out* or *Minions*. The characters from the movies are often found in games and merchandise. A few children in the sample collect Disney trading cards, which were available from a major supermarket chain at the time of the data collection.

Children use digital tools for relaxation and fun. As one girl, age 6, puts it, “When you play [on the iPad] you don't have to say anything. You don't have to say 'Hello, hello, here I am!'” This girl enjoys being in charge and not having to take part in social conversations - she wants few demands to put on her.

Moreover, different digital technologies and media platforms are used in combination for different purposes. The children in the sample use a range of different tools for different occasions and content. Television is for family time; the iPad is for relaxation and casual gaming with peers; and computers are for more focused gaming - or for online (for instance, YouTube) content - often viewed in the company of their parents.

Furthermore, digital technologies are also tools to facilitate the engagement of siblings with each other. This is especially true for two families (DK 02 and DK 04) in which there are older brothers (8 or 9 years old) and play culture is more established. In these two families, for example, parents also actively take part in playing computer games with their children. These range from complex games such as Minecraft to more casual games such as HayDay. Often, older siblings will help younger children learn how to navigate the technical interface on, for instance, the iPad (for example, in family DK 06, the 6-year-old girl helps the 2-year-

old navigate the iPad – and they play together). In families with even older siblings (DK 07 and DK 08), they are mentioned as role models who encourage the 6-7-year-olds to try new games or use new tools even though they may not take as active a part in the children's play on an everyday basis.

In particular, family DK 01 is very engaged in the use of digital tools, which is related to the mother's work as a project manager at a library. In this family, for instance, small programmable robots are used for birthday parties, and all the family members actively take part in producing videos or other ways of expressing themselves creatively through and with digital media.

Many parents express concerns about the risks and problems children may encounter in years to come. Still, they specifically underline that such problems are not yet relevant for their children, who are 6-7 years of age. Parents express concern about the future use of social networking technologies/social network sites with which the children do not engage yet. However, many of the children know SNS logos (for instance, Facebook and Instagram) from their parents' or other relatives' Internet habits (e.g., Boy, age 6: "My mother checks it [Facebook] every day."). Even though they do not use social networking tools themselves, some of the children know that Facebook is for communicating and "sending messages" and that Instagram is for "taking pictures". For the children in the study, "social networking" with peers is mediated by parents who, for example, may help them send a text message to a friend.

## 3.2 How Are New (Online) Technologies Perceived by the Different Family Members?

Children do not think about media - they are just there. However, they know, for example, that iPads are restricted in ways that other toys or tools are not.

Parents, on the other hand, are very aware of the way children use media, and they actively structure and moderate their media usage. In all the families, television and iPads are not allowed on weekday mornings before for school. However, on weekends, children are allowed to use media technologies as soon as they wake up. Some parents specifically state that iPads, etc., should mainly be used for educational purposes in contrast to the children, who think of the technologies as something they use for fun and for relaxation.

Children under the age of 8 are most often 'local' users of media and technology. They use the iPad - and similar platforms - to download, play, and watch specific content, but they rarely upload things or communicate with others through social network sites (SNS), etc. They do not know what the Internet is. To them, the Internet is an infrastructure, and most of the children in the sample only reflect on their access when it is not there - for instance, when they do not have WiFi access on road trips, etc. Some of them use YouTube (or Netflix), but they do not reflect much on the concept of being online.

In particular, the iPad is seen as a tool for knowledge/for searching for information; the iPad can provide the children with information and answers to questions they do not know, but almost all of the 6-7-year-old children need help from their parents to search the Internet for information (since they cannot yet write).

One child plays online games (Minecraft) on computers (and chooses PCs over iPads to do so). This was initiated and inspired by older siblings. One child uses the computer

extensively to watch Minecraft videos on YouTube, which he uses for inspiration when playing on the iPad.

## 3.3 How Do Parents Manage Their Younger Children's Use of (Online) Technologies?

Generally, parents' attitudes and regulations towards their children's media use are constructive but quite clear. In all the families, there are rules regarding when and for how long digital tools (e.g., the iPad) may be used and what kind of content is appropriate. Content containing blood, violence, and 'teenage' shows (as found, for instance, on Netflix) is restricted. Several of the parents see themselves as quite open-minded when it comes to the children's use of technology, and some refer to themselves as "not having any rules".

Only a few parents encourage their children to use specific apps on the iPad. In family 3, there used to be a rule that the girl should use an app with educational content for a certain amount of time before 'play' apps or entertainment. In this way, the parents wanted to encourage her to find some interest in letters and numbers, etc., before she started school (grade 0) in the summer. In family 1, the father expressed a wish for his children to use other kinds of technologies besides the iPad because of its closed structures and limited opportunities for more creative uses.

Parents generally managed their children's use of digital technologies through time and space restrictions. In all the families interviewed, there were restrictions on the amount of time children were allowed to spend using digital tools. In some (a few) families, there is a set rule; in most of the families, this is a matter discussed (or determined) on a day-to-day basis.

In one family (3) in which the mother was pregnant and due a few weeks after the interview, digital tools (the iPad) were specifically used to provide a break during the afternoon, allowing her to take a nap. After this, she was ready to engage with the children again. In most families, digital tools are used after the family comes home from school and work to recharge before other activities.

## 3.4 What Role Do These New (Online) Technologies Play in the Lives of Children and Parent?

Digital technologies are an integrated part of everyday life of all the families interviewed. They are used for fun and relaxation as well as for family activities or educational purposes. For both children and parents, devices such as the television or the iPad can serve as tools for individual enjoyment and relaxation and bring family members together in shared activities. Children - but, even more, parents - use digital technologies to explore and find new information. Some children are aware, for instance, that a computer or a smartphone can be used to 'look something up', but they rarely take an active part in such practices themselves. This illustrates the understanding children have of the concept of the 'Internet'. To them, the Internet is just an infrastructure, something that serves as the basis for a range of activities - including watching TV - but not as an activity or a 'space' in itself. To the children in this study, the Internet is not 'out there' - it's just there.

## 3.5 Surprising Findings

As mentioned above, children in the study use the Internet frequently, but they do not necessarily know what it is. Access to "the Net" is what makes the iPad, YouTube, and Netflix work, but the children are not otherwise aware of the possibilities and pitfalls of the Internet. Parents are aware that, when the children get older, they will need to discuss the risks of being online; but, at this point, it does not make much sense to start having these discussions. This study, therefore, indicates that research and policymaking in this area should focus less on online behaviour and risks and instead focus on more active and creative uses of media and ICT to stimulate critical thinking in both children and parents in a more nuanced way.

# 4. DIGCOMP Framework

Based on: DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe

- **Authors:** Author: Anusca Ferrari
- **Editors:** Yves Punie and Barbara N. Brečko
- **EUR Number:** JRC83167
- **Publication date:** 8/2013

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## 4.1 Based on the Interviews and Observations, What Digital Skills Do the Children Interviewed Have as Described in the DIGCOMP Framework?

| **DGCOMP Skills/ Interviewed Child** | Family 1 | Family 2 | Family 3 | Family 4 | Family 5 | Family 6 | Family 7 | Family 8 | Family 9 | Family 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | **DK1g6** | **DK2b6** | **DK3g6** | **DK4b5** | **DK5g5** | **Dk6g6** | **Dk07b6** | **Dk8b6** | **Dk9g6** | **Dk10b6** |
| **1** | IU (*) | IU (**) | IU (***) | BU (**) | BU (**) | Not there yet (***) | BU (**) | BU (**) | Not there yet (***) | Not there yet (***) |
| **2** | Not there yet (***) | IU (**) | BU (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **3** | BU (*) | BU (***) | BU (***) | BU (***) | BU (*) | BU (***) | BU (***) | Not there yet (***) | BU (***) | Not there yet (***) |
| **4** | BU (**) | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (**) | BU (***) | Not there yet (***) | Not there yet (***) |
| **5** | BU (**) | BU (***) | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **6** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **7** | BU (***) | BU (***) | BU (*) | BU (*) | Not there yet (***) | Not there yet (***) | BU (**) | BU (**) | Not there yet (***) | Not there yet (***) |
| **8** | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) |
| **9** | IU (***) | BU (***) | BU (*) | BU (***) | BU (**) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **10** | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **11** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **12** | BU (*) | BU (*) | Not there yet (***) | Not there yet (***) | BU (*) | Not there yet (***) | BU (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **13** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **14** | Not there yet (**) | BU (***) | Not there yet (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (***) | BU (**) | Not there yet (***) | Not there yet (***) |
| **15** | Not there yet (***) | Not there yet (***) | Not there yet (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (**) | Not there yet (***) | Not there yet (***) |
| **16** | BU (***) | Not there yet (***) | BU (**) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **17** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **18** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **19** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **20** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |
| **21** | BU (**) | BU (**) | BU (**) | BU (***) | BU (**) | Not there yet (***) | BU (**) | BU (**) | Not there yet (***) | Not there yet (***) |
| **22** | IU (**) | BU (**) | BU (*) | BU (***) | BU (**) | Not there yet (***) | BU (**) | BU (**) | Not there yet (***) | Not there yet (***) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **23** | BU (***) | BU (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | BU (**) | BU (***) | Not there yet (***) | Not there yet (***) |
| **24** | BU (***) | BU (***) | BU (*) | BU (***) | BU (***) | Not there yet (***) | BU (**) | BU (**) | Not there yet (***) | Not there yet (***) |
| **25** | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) | Not there yet (***) |

## 4.2 Discussion of the Categorisation of Young Children's Skills with DIGCOMP

We question whether this framework is suited for evaluating the digital skills of small children. This is due to several issues. First, the framework seems to centre mostly on computer or laptop usage. In most of the Danish families in this study, the children do not yet use computers or laptops, but they are active and, to some extent, skilled tablet users. Second, some statements (for instance, 3BU: "I can save or store files or content (e.g., text, pictures, music, videos, web pages) and retrieve them once saved or stored") may be interpreted quite differently, depending on whether we are talking about a computer or a tablet. Many of the children interviewed know how to save pictures or videos on the family iPad, but they would not know how to save and store files on a computer. Therefore, we find that a framework reflecting the current technology use of 6-7-year-olds would be better suited for evaluating their digital skills. In addition, some statements (for instance, 17) seem arbitrary. Why you are more skilled if you can keep track of your digital footprints than if you take basic measures to save energy?

Third, there is a fundamental methodological source of error in the design of this framework since it was presumably meant to be used as a self-evaluation tool. Albeit it is recorded in the framework, whether each of the parameters were observed, self-reported, or based on researcher evaluation, the possible different perceptions from children and parents are not taken into consideration. Furthermore, this also points to the fact that some parameters may be evaluated differently when applied to a child rather than an adult. When, for instance, is a child capable of classifying information? When can they put files into folders? When do they know whether a YouTube video is worth spending time on just by looking at the cover picture?

We have no doubt that many of the digital skills presented in the framework will be relevant for the children interviewed as they get older and start using the Internet and computers for various other purposes (such as social networking, homework assignments, independent information searches, etc.). For now, however, their use of the Internet centres around the use of apps and games, which are not skills represented in the framework.

Moreover, the technological infrastructure of tablets and similar platforms should be taken into consideration for the development of evaluation tools for future projects. In our view, digital literacy is a matter of both general competencies and technology-specific competencies. What is important, seen in the long-term perspective, is that children develop a range of different competencies and learn to use a number of different tools and technologies, which the snapshot evaluation does not take into account. Furthermore, we would also suggest that these evaluation tools focus on a more general understanding of computer technology - perhaps, even programming and coding skills.

A recent report on the use of digital media and technology by toddlers provides a different take on the issue of competency by focusing also on the interplay between children and caregivers (for instance, parents). As such, for each skill, it is indicated whether the child is 'able to do it alone', 'able to do it with assistance', or 'unable to do it/unaware of it' (Marsh et al., 2015:10). This approach might be one way to provide a more nuanced understanding of these matters. In addition, the framework presented by Marsh et al. is based on the digital

technologies that the children in the study actually use and, as such, is much more relevant to the concrete empirical findings.

## DIGCOMP GRID

| Basic user | | Independent user | | Proficient user | |
|---|---|---|---|---|---|
| I can look for information online using a search engine. | 1BU | I can use different search engines to find information. I use some filters when searching (e.g. searching only images, videos, maps). | 1IU | I can use advanced search strategies (e.g. using search operators) to find reliable information on the internet. I can use web feeds (like RSS) to be updated with content I am interested in. | 1PU |
| I know not all online information is reliable. | 2BU | I compare different sources to assess the reliability of the information I find. | 2IU | I can assess the validity and credibility of information using a range of criteria. I am aware of new advances in information search, storage and retrieval. | 2PU |
| I can save or store files or content (e.g. text, pictures, music, videos, web pages) and retrieve them once saved or stored. | 3 BU | I classify the information in a methodical way using files and folders to locate these easier. I do backups of information or files I have stored. | 3IU | I can save information found on the internet in different formats. I can use cloud information storage services. | 3PU |
| I can communicate with others using mobile phone, Voice over IP (e.g. Skype) e-mail or chat – using basic features (e.g. voice messaging, SMS, send and receive e-mails, text exchange). | 4 BU | I can use advanced features of several communication tools (e.g. using Voice over IP and sharing files). | 4IU | I actively use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs, social networks) for online communication. | 4PU |
| I can share files and content using simple tools. | 5 BU | I can use collaboration tools and contribute to e.g. shared documents/files someone else has created. | 5IU | I can create and manage content with collaboration tools (e.g. electronic calendars, project management systems, online proofing, online spreadsheets). | 5PU |
| I know I can use digital technologies to interact with services (as governments, banks, hospitals, schools, libraries). | 6 BU | I can use some features of online services (e.g. public services, e-banking, online shopping). | 6IU | I actively participate in online spaces and use several online services (e.g. public services, e-banking, online shopping). | 6PU |
| I am aware of social networking sites and online collaboration tools. | 7 BU | I pass on or share knowledge with others online (e.g. through social networking tools or in online communities). | 7IU | I can use advanced features of communication tools (e.g. video conferencing, data sharing, application sharing). | 7PU |
| I am aware that when using digital tools, certain communication rules apply (e.g. when commenting, sharing personal information). | 8 BU | I am aware of and use the rules of online communication ("netiquette"). | 8IU | | 8PU |
| I can produce simple digital content (e.g. text, tables, images, audio files) in at least one format using digital tools. | 9 BU | I can produce complex digital content in different formats (e.g. text, tables, images, audio files). I can use tools/editors for creating web page or blog using templates (e.g. WordPress). | 9IU | I can produce or modify complex, multimedia content in different formats, using a variety of digital platforms, tools and environments. | 9PU |
| I can make basic editing to content produced by others. | 10 BU | I can apply basic formatting (e.g. insert footnotes, charts, tables) to the content I or others have produced. | 10IU | I can create a website using a programming language. | 10PU |

| | | | | | |
|---|---|---|---|---|---|
| I know that content can be covered by copyright. | 11BU | I know how to reference and reuse content covered by copyright. | 11IU | I can use advanced formatting functions of different tools (e.g. mail merge, merging documents of different formats, using advanced formulas, macros). | 11PU |
| I can apply and modify simple functions and settings of software and applications that I use (e.g. change default settings). | 12 BU | I know the basics of one programming language. | 12IU | I know how to apply licences and copyrights. | 12PU |
| | 13 BU | | 13IU | I can use several programming languages. I know how to design, create and modify databases with a computer tool. | 13PU |
| I can take basic steps to protect my devices (e.g. using anti-viruses and passwords). I know that not all online information is reliable. | 14 BU | I have installed security programmes on the device(s) that I use to access the Internet (e.g. antivirus, firewall). I run these programmes on a regular basis and I update them regularly. | 14IU | I frequently check the security configuration and systems of my devices and/or of the applications I use. | 14PU |
| I am aware that my credentials (username and password) can be stolen. I know I should not reveal private information online. | 15 BU | I use different passwords to access equipment, devices and digital services and I modify them on a periodic basis. | 15IU | I know how to react if my computer is infected by a virus. | 15PU |
| I know that using digital technology too extensively can affect my health. | 16 BU | I can identify the websites or e-mail messages which might be used to scam. I can identify a phishing e-mail. | 16IU | I can configure or modify the firewall and security settings of my digital devices. | 16PU |
| I take basic measures to save energy. | 17 BU | I can shape my online digital identity and keep track of my digital footprint. | 17IU | I know how to encrypt e-mails or files. | 17PU |
| | 18 BU | I understand the health risks associated with the use of digital technology (e.g. ergonomy, risk of addiction). | 18IU | I can apply filters to spam e-mails. | 18PU |
| | 19 BU | I understand the positive and negative impact of technology on the environment. | 19IU | To avoid health problems (physical and psychological), I make reasonable use of information and communication technology. | 19PU |
| | 20 BU | | 20IU | I have an informed stance on the impact of digital technologies on everyday life, online consumption, and the environment. | 20PU |
| I can find support and assistance when a technical problem occurs or when using a new device, program or application. | 21 BU | I can solve most of the more frequent problems that arise when using digital technologies. | 21IU | I can solve almost all problems that arise when using digital technology. | 21PU |
| I know how to solve some routine problems (e.g. close program, re-start computer, re-install/update program, check internet connection). | 22 BU | I can use digital technologies to solve (non-technical) problems. I can select a digital tool that suits my needs and assess its effectiveness. | 22IU | I can choose the right tool, device, application, software or service to solve (non-technical) problems. | 22PU |
| I know that digital tools can help me in solving problems. I am also aware that they have their limitations. | 23 BU | I can solve technological problems by exploring the settings and options of programmes or tools. | 23IU | I am aware of new technological developments. I understand how new tools work. | 23PU |

| | | | | | |
|---|---|---|---|---|---|
| When confronted with a technological or non-technological problem, I can use the digital tools I know to solve it. | 24 BU | I regularly update my digital skills. I am aware of my limits and try to fill my gaps. | 24IU | I frequently update my digital skills. | 24PU |
| I am aware that I need to update my digital skills regularly. | 25 BU | | 25IU | | 25PU |

# 5. Method

## 5.1 Procedure

This study is based on visits to ten Danish families. Two researchers participated in each visit and conducted qualitative interviews as well as observations with the parents and children in each family. Two academic researchers[5] and one student worker[6] took part in the interviews and took turns in interviewing parents and children, respectively. This method provided meant that all three researchers gained a broad overview. Parent interviews were recorded with a dictaphone; child interviews were recorded as well but also supplemented with photos of their bedrooms, their toys, and the technologies they had.

Interviews were transcribed using a meaning condensation method. These transcripts were coded with reference to the four overall research questions of the study as well as a focus on additional/surprising findings. Furthermore, the ten family portraits were written on the basis of the interview data and the photos, which functioned as reference points and specification of the analytical points. The full report was written collaboratively by two academic researchers with relevant input from the student worker and the project manager from the Danish Media Council for Children and Youth.

### 5.1.1. The Sampling Procedure

The families interviewed in the sample were recruited in various ways (schools, after-school care, snowballing, Facebook, direct mails, personal networks). Due to the relatively short time span of the data collection period, the researchers had to rely on snowball sampling through private and professional networks. A certain diversity in family types and an equal number of boys and girls were among the primary recruiting principles for the sample. For instance, a variety in family types was seen as fruitful and important for the study. As a result, the sample consists of married and divorced parents - in some cases, stepparents and stepsiblings, older and younger siblings, and families with just one child. The sociodemographic backgrounds of the families were not as diverse as we would have wished. For instance, no families in the sample came from an ethnic minority background, and none of them were unemployed or relatively poorly paid. For future studies in these areas, these issues would be relevant and interesting to address.

### 5.1.2. The Sample

The ten families in the sample are characterised below in terms of demographic factors. For further information on each of the families, see the 10 family portraits (chapter 2).

[5] Malene Charlotte Larsen, Ph.D., Associate Professor at Aalborg University, and Stine Liv Johansen, Ph.D., Associate Professor at Aarhus University.

[6] Marie Junge Ernst, B.A. in media studies, master's student at Aarhus University and the University of Copenhagen.

| Family code | Member code | Low – medium- high family income | Ethnicity | Sex | Age | Years of school/ max. level of education | Profession of parents |
|---|---|---|---|---|---|---|---|
| DK1 | DK1f38 | Medium | Danish | m | 38 | Tertiary | Team leader for the local municipality |
| DK1 | DK1m40 | Medium | Danish | f | 40 | Tertiary | Development consultant at library |
| DK1 | DK1g6 | Medium | Danish | f | 6 | Primary | |
| DK1 | DK1b4 | Medium | Danish | m | 4 | Kindergarten | |
| DK2 | DK2f34 | High | Danish | m | 34 | Tertiary | Works with IT |
| DK2 | DK2m31 | High | Danish | f | 31 | Tertiary | Lecturer |
| DK2 | DK2b6 | High | Danish | m | 6 | Primary | |
| DK2 | DK2b9 | High | Danish | m | 9 | Primary | |
| DK3 | DK3f34 | Medium | Danish | m | 34 | Tertiary | Insurance controller |
| DK3 | DK3m32 | Medium | Danish | f | 32 | Tertiary | Graduate in human nutrition |
| DK3 | DK3g6 | Medium | Danish | f | 6 | Primary | |
| DK3 | DK3g3 | Medium | Danish | f | 3 | Kindergarten | |
| DK4 | DK4f37 | Medium | Danish | m | 37 | Tertiary | Engineer |
| DK4 | DK4m35 | Medium | Danish | f | 35 | Tertiary | Teacher |
| DK4 | DK4b5 | Medium | Danish | m | 5 | Primary | |
| DK4 | DK4b8 | Medium | Danish | m | 8 | Primary | |
| DK5 | DK5f44 | High | Danish | m | 44 | Tertiary | Chief of communication with the government |
| DK5 | DK5m36 | High | Danish | f | 36 | Tertiary | Special consultant with the government |
| DK5 | DK5g5 | High | Danish | f | 5 | Primary | |
| DK6 | DK6f32 | Medium | Danish | m | 32 | Secondary | Employee at SIEMENS |
| DK6 | DK6m32 | Medium | Danish | f | 32 | Tertiary | Student |
| DK6 | DK6g6 | Medium | Danish | f | 6 | Primary | |
| DK6 | DK2g2 | Medium | Danish | f | 2 | Kindergarten | |
| DK7 | DK7m33 | Medium | Danish | f | 33 | Tertiary | Teacher |
| DK7 | DK7b6 | Medium | Danish | m | 6 | Primary | |
| DK8 | DK8f37 | Medium | Danish | m | 37 | Tertiary | Innovation employee at a cultural institution |
| DK8 | DK8b6 | Medium | Danish | m | 6 | Primary | |
| DK9 | DK9g6 | Medium | Danish | f | 6 | Primary | |
| DK9 | DK9m30 | Medium | Danish | f | 30 | Tertiary | Health care consultant for a municipality |
| DK9 | DK9sf28 | Medium | Danish | m | 28 | Tertiary | Engineer |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DK10 | DK10b6 | Medium | Danish | m | 6 | Primary | |
| DK10 | DK10g3 | Medium | Danish | f | 3 | Kindergarten | |
| DK10 | DK10m35 | Medium | Danish | f | 35 | Tertiary | Works with unemployed youth |
| DK10 | DK10m35 | Medium | Danish | f | 35 | Tertiary | Works at an auction house |

### 5.1.3. Implementation of the Protocol of Observation

All family interviews - with parents and children, respectively - were based on the protocol of observation. The interview guide was translated into Danish and adapted to a Danish context. In practice, the interview guide was never used very strictly. Instead, both parents and children were urged to tell their own stories about their everyday life, their use of technology, and their norms and rules regarding its use. The interview guide still functioned as such - a guide, but the different interviews placed a different emphasis on issues that were relevant for each of the families. In general, it made little sense to discuss rules and norms regarding online behaviour since the children in the study did not engage in online communication; and their parents, therefore, did not find it pertinent to discuss this yet. Where there were older siblings in the family, the rules were more prevalent; and, therefore, these issues mattered more to the parents - and had more prominence in the interviews.

Due to the qualitative approach to the interviews, more emphasis was put on the narratives, examples and discussions of everyday life in the families, children's meaning-making practices, and parents' norms and ambivalence than on how much time children spent engaged with technology, how old they were when they began using different technologies, and so on. These factors were important because they formed the foundations for norms and rules, but it was found that some parents often had difficulty trying to measure the exact amount of time their children spent with technology and/or the exact age when their children first began to use the iPad or to watch TV. This in itself seems to be an important finding since it points to the fact that the use of media technologies has become a ubiquitous part of the fabric of everyday life, which is not easily distinguished from other practices and activities.

Interviews and observations were supported by several smaller assignments, using different tools such as a deck of cards with pictures of different toys and technologies, word cards, and an activity book with stickers depicting different everyday activities, which was used to get the child to talk about his/her day and the things he or she did at home and/or at school, etc. The different tools are listed below, indicating whether they (generally) have been used during visits to the families.

| **Interview parts/tools** | **Ice-breaking** | **Parents** | **Children** |
|---|---|---|---|
| The activity book | **X** | | |
| The card game + smiley | | | **X** |
| The word cards | | **X** | |
| The ICT use chart | | | |
| The digital tour | | | **X** |
| Taking pictures by children | | | **X** |
| Drawings | | | **(X)** |
| Apps and digital services logo and icons | | | **X** |

### 5.1.4. Recording

Interviews were recorded on dictaphones and/or built-in dictaphones on smartphones. A series of photographs was taken in the children's rooms and family living rooms, using smartphones or cameras. Furthermore, video observations of children using various technologies were made (focusing especially on the most preferred technology, the iPad). All interviews and photos were transferred to a closed file-sharing system from which all three researchers could access all files. This meant that all researchers had a good sense of the data from all ten family visits, which was important for the analytical work.

### 5.1.5. Implementation of the Protocol of Analysis

The interviews were transcribed partially and thematically - i.e., not in full detail - and afterwards coded with reference to the protocol of analysis. Transcripts and coding were in Danish. Transcripts and coding were done as the interview process was still ongoing. This was due to the very limited amount of time that was available for the research project as a whole. This might potentially have had an impact on the results of the analysis presented in this report. This was sought to be prevented through an iterative process in which new findings and examples was continuously added to the report.

## 5.2. Discussion

### 5.2.1 How Could the Study Be Improved?

As already emphasised, the sociodemographic backgrounds of the families interviewed were not as diverse as we would have liked, and families with medium or higher incomes are slightly over-represented in the sample. In future or follow-up research, it is important to allocate enough time in the recruitment process to secure an even more diverse group of respondents. Getting access to families with lower socioeconomic status can be time-consuming, and it is important to develop a sense of trust between the researchers and the people being interviewed. Although we did try to recruit informants through personal contacts within Save the Children Denmark, this turned out to be a dead end.

### 5.2.2 What Are the Methodological Recommendations for Future Research?

The timeframe is the most obvious challenge to studies of this sort. On one hand, you want your data to be as new and as up-to-date as possible; on the other hand, qualitative research is time-consuming and highly demanding for both researchers and for the informants, who must open their homes even in the hours just before dinner and on weekends. Still, the recommendation would be to have more time to recruit, to collect data, and for the analytical process in particular. Given the rather strict methodological setup of this study, it was doable; but, in general, more time is needed for the data collection and analysis to be as rigorous as we would like it to be.

### 5.2.3 What Is the Future Direction for Research on This Topic?

At both a national and a trans-national level, this study has provided immeasurable insights into a hitherto only scarcely described field in media and childhood studies. Despite the methodological and temporal challenges described above, this study has still provided new insights into on-going debates on the role of technology in young children's lives. Hopefully, this could be combined with other qualitative and quantitative methods in the future. For instance, more in-depth studies in families, using diaries, could add more structure to the narratives. Data-mining methods could give valuable knowledge regarding the actual usage patterns in which children and parents engage. And, finally, anthropological methodologies could provide nuance and anchor the findings of this study in broader discussions of childhood in 21st-century Europe.

# 6. Conclusions

In this section, we shall sum up the keys findings of the study and the implications and recommendations to be drawn from them.

## 6.1. Key Findings

Danish children are generally heavy users of new digital technologies. In all the families interviewed, children have access to a tablet, which is their preferred and most commonly-used technology. Parents are generally encouraging when it comes to their children's use of technology even though they have some concerns regarding content and time consumption. Overall, they find their children's use of digital technologies unproblematic and are quite pragmatic in their regulations of their use of digital media. However, they are aware that safety issues regarding online behaviour may arise when their children get older and start using digital media for social networking purposes. For the time being, digital technologies are primarily associated with fun, relaxation, gaming, a bit of learning, and just "being together" in the family.

Broadcast television is becoming less important for the families in the sample. Most of the children's television (and film) viewing is streamed content - often, via apps. Generally, apps are the most common tools for gaming, television streaming, and browsing. Even though the children in the study consume online content, they have a limited comprehension of what it means to be 'online', and the 'Internet' is a non-specific concept for them. They may be aware of whether they have Wi-Fi access or not, but they do not consider the Internet a 'space'. Therefore, they do not use it for communication purposes. Their use of digital media is mostly passive, consisting of TV viewing or playing pre-installed games.

## 6.2. Challenges and Recommendations

### 6.2.1 Recommendations to Policymakers

Since children under the age of 8 are most often 'local' users of media and technology (and do not yet use digital media for communication or social networking purposes), we recommend that policies regarding the youngest children have a twofold purpose: 1) A focus on providing and distributing high-quality content targeted at the specific age group as well as informing and educating parents, teachers, and pedagogues working with children under the age of 8. 2) A focus on providing knowledge and digital skills to young children and their parents and caregivers. The latter should be done in order to prepare children (and parents) for tween and teen years and to set the foundations for a broad media- and technology-related education for future generations. A main focus area should be strategies aimed at children and young people as creators and co-creators of digital content and technologies and not merely as consumers. This field is currently underdeveloped but should play a central part in future empowerment strategies within the field of media literacy.

### 6.2.2 Recommendations to Industry

In Denmark, public service institutions such as DR (Danish Broadcasting Corporation) play a significant role in providing online content to young children. This should be further developed, just as public service providers and private companies should work together with the shared aim of developing and distributing high-quality content - in Danish - to children and families.

### 6.2.3 Recommendations to Parents and Caregivers

Children under the age of 8 are heavy users of digital media and technologies. New digital and mobile platforms, such as the iPad, and new online services, such as YouTube and Ramasjang, provide even the youngest children with new options and possibilities for accessing and viewing a wide range of content as well as ways to navigate and choose content that were unheard of only five years ago. Therefore, parents should engage with children's media and technology use. All the parents in this study do so. The children and their parents make use of the media together (watching films or TV or playing games together). Still, digital media could be made useful for many other purposes; and, with some guidance (from, for instance, schools, libraries, or industries), parents may engage in other activities related to digital technologies with their children, as well.

### 6.2.4 Recommendations to School, Libraries, Museums …

There are a wide range of opportunities for schools, libraries, and other institutions to contribute to a more diverse and, perhaps, also more interesting development of media skills among both children and parents. As part of their ICT strategy, schools could implement creative and innovative uses of technologies, and libraries could provide to an even greater extent creative spaces in which ICT and media technologies could be explored in more nuanced ways. Schools and libraries have an especially important role to play in providing knowledge and information to parents about the possibilities and challenges in children's media use as well as concrete knowledge, tips, and tricks regarding interesting apps and games. Libraries have an especially important role to play as a knowledge hub; they could guide parents and caregivers and provide the opportunity and setting for parents and children to encounter and explore new media and technology together.

# 7. References

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