

ICT usage across Europe

A literature review and
an overview of existing data

DigiGen - working paper series - literature review



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Abstract: This deliverable consists of two main parts: a literature review on the four main research areas DigiGen is about (family life, leisure time, education and civic participation) and an overview of existing databases in relation to Information and Communication Technologies (ICT) and the extent to which such data allows the analysis of children at-risk groups.

Key words: ICT; children and youth; literature review; microdata

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Executive Summary

This deliverable consists of two main parts. First, we provide a literature review on the four main areas within DigiGen: family life, leisure time, education and civic participation. The review demonstrates the existing diversity of research on the relationship between digital technology and individual family members as well as the family system. This review also examines parental involvement and the negotiations in which parents and children are engaged in order to arrange the ways and the amount of Information and Communication Technologies (ICT) use during children's leisure time, the risk areas and the most common digital practices. Furthermore, it contains the current state of research regarding ICT in/and education while considering the availability of ICT in schools, the actual use of ICT in schools, the computer and information literacy competencies of students and teachers' experiences with ICT, among other aspects. Finally, we also refer to civic participation and political engagement of young people with the aim to understand the context within which the political behaviour of young people is manifested online and to assess the extent to which it affects offline political practices.

Second, we provide an overview of existing databases in relation to ICT and the extent to which such data allows the analysis of at-risk groups among children and youth. The section is divided into two main parts by which the first one reviews existing databases at the international level and the second one covers national databases in the Consortium countries. Each database is presented in a table that contains general information about the database and about the ICT indicators that contains, whether certain at-risk groups can be identified in that given database and our subjective evaluation regarding the strengths and weaknesses of each database. When possible, we also comment on the potential improvement of the database for future analyses. Finally, the last section contains some concluding remarks that intend to summarize the information provided as well as the main strengths and weaknesses of current data for empirical research. Most importantly, we also identify the information lacking in current surveys and provide concrete recommendations for the improvement of the existing data that could enrich future analyses.

List of abbreviations

CIL	Computer and Information Literacy
DoA	Description of Action
EU	European Union
FP7	Seventh Framework Programme
HECC	Highly Equipped Connected Classrooms
ICILS	International Computer and Information Literacy Study
ICT	Information and Communication Technology
IT	Information Technology
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
TALIS	The Teaching and Learning International Survey
USA	United States of America

1. Presentation

The DoA describes the deliverable as follows:

D2.1: ICT-use in Europe

ICT-use in Europe – A literature review: overview on families, at-risk-groups in Europe. Presented as DigiGen Working Paper 2.1 with the provisional title 'ICT usage across Europe: An overview of existing data'. This deliverable was merged with a literature review deliverable from work package 3; thus the titled has been amended: ICT usage across Europe: A literature review and an overview of existing data.'

The task includes a review of the literature and the existing databases at European and national level (within the Consortium) that provide information on the online behaviour of children and young people. A detailed account of the information contained in different databases will be provided. The extent to which different databases from different participating countries are comparable will also be explored, allowing for comparative cross-country analysis. Moreover, this task will identify the type of relevant information on ICT usage that is lacking from current surveys and will provide concrete recommendations for the incorporation of variables or modules that could enrich future analyses.

Lead Partner: UdG. Participants: OsloMet, UPSPS, UOL, AIF, UPB, UBB, TLU. Duration: Months 1 – 8.

This deliverable consists of two main parts. Section 2, following this presentation, is a literature review on the four main research areas that DigiGen covers: family life, leisure time, education and civic participation. Section 3 contains an overview of existing databases in relation to Information and Communication Technologies (ICT) and the extent to which such data allows the analysis of children at-risk groups. The section is divided into two main parts by which the first one reviews existing databases at the international level and the second one covers national databases in the Consortium countries.

2. Literature review

2.1 Introduction

The following sub-sections in this deliverable provide a thorough literature review regarding Information and Communication Technologies (ICT) and children (and young people) focusing on four main research areas: family life, leisure time, education and civic participation.³ The overarching aim of this review is to establish where the literature stands at the moment with regard to the most relevant questions for which research is seeking an answer and potential questions for future analysis.

Following this introduction, section 2.2 gives detail of the existing literature on the effects of technology on family life (see also Lorenz and Kapella, 2020).⁴ It demonstrates the current diversity of research on the relationship between digital technology and individual family members as well as the family system. In this sense, the term family is broadly defined and includes a variety of different living and family forms.

Section 2.3 is devoted to leisure time and examines parental involvement, both in the sense of the parents' digital capital and the negotiations in which parents and children are engaged in order to arrange the ways and the amount of ICT use during children's leisure time, the risk areas that have been identified in the relevant literature, and the digital practices deployed by children and adolescents to enhance their sociability and their skills.

Section 2.4 contains the current state of research regarding ICT in/and education. The review covers the availability of ICT in schools, the actual use of ICT in schools, the computer and information literacy competencies of students with a particular focus on the importance of gender and the socio-economic background and teachers' experiences with ICT.

Section 2.5 refers to civic participation and political engagement of young people. It aims to research and analyse the context within which the political behaviour of young people is manifested online and assess the extent to which it affects offline political practices. Civic engagement is defined broadly – encompassing both, grassroots mobilization, activism and participation in institutionalized politics as well as the new participatory repertoires (Thorston, 2012), which direct attention at the 'small-scale, often individual decisions and actions that have either a political or ethical frame of reference (or both) and remain submerged in everyday life' (Bakardijeva, 2009) and often take place online.

Section 2.6 provides a summary of the conclusions that can be drawn from this literature review and proposes some avenues for future research.

2.2 ICT and families

2.2.1 Families' ICT use

One very well understood and continuously updated aspect of digital technologies looks at the ways children use ICT in their daily lives (see for example Šmahel et al., 2020; IFES, 2020; MPFS, 2016a). Children today are living in media-rich households with access to a variety of different devices, which they use from an early age on. According to Eurostat (2019), Internet access is almost universal for households with children in Europe (98% on the EU average) and parents are also more likely to use digital technologies than adults without children (Kildare and Middlemiss, 2017). Young children use ICT to relax or for entertainment purposes by watching videos on the tablet (Chaudron et al., 2018; Teuwen et al., 2012), which is their preferred digital device

³ These four research areas correspond to Working Package 3 (family), 4 (leisure), 5 (education) and 6 (civic participation) of the DigiGen project.

⁴ For research papers providing an overview on the effect of ICT on families see, for example, Sharaievska (2017) and AGF (2019).

(European Commission, 2019a; Chaudron et al., 2018; Holdampf-Wendel et al., 2014; Chaudron, 2015; IFES 2013). The older the children become, the more time they spend on a variety of different digital activities (Šmahel et al., 2020; Holdampf-Wendel et al., 2014).

Children and young people most frequently use digital devices in their homes (Livingstone et al., 2011; MPFS, 2016a; Tillmann and Hugger, 2014). The omnipresence of ICT at home shapes family dynamics. As a result, digital technologies are part of the daily act of reproducing family by social interactions among its members and can thus be understood as a central element of the concept of “doing family” (for the concept see Jurczyk, 2014 and 2017; Finch, 2007). To better understand how digital technologies affect the reproduction of family, one needs to know whether children, young people and their parents normally use their devices alone or together with other family members. Against the background of ‘doing family’, joint family activities play an essential role because shared activities are more likely to create a sense of ‘we-ness’ which supports family cohesion (Galvin, 2006).

Digital device use is increasingly privatised and mobile, for example, more children access the Internet in the privacy of their bedroom (Chaudron, 2015; Livingstone et al., 2014). The most frequently done shared family activity today is still watching TV. Even though this shared ICT activity is still common, its popularity has decreased significantly over the last decade (Education Group GmbH, 2019). Studies relate this to the fact that with the introduction of online streaming providers available to use on various Internet-connected devices, also watching TV has become more privatised. Gathering together to watch TV is nowadays perceived as a family event only for selected shows or events that family members want to watch and experience together (Children’s Commissioner, 2017; Brown and Barkhuus, 2011). Other ICT family activities include learning about something on the Internet, contacting friends or family together, and playing computer/video games collectively (Courtois and Nelissen, 2018; Livingstone et al., 2017; MPFS, 2016b; Chambers, 2016; Brown and Barkhuus, 2011).

All shared ICT activities can be described by one of the following characteristics, namely either *passive co-presence* or *active co-use* interactions. During co-present ICT family activities, one family member is actively engaged in an ICT activity, while other family members are present but not actively involved in the ICT activity. By contrast, in the case of co-use several family members take an active role together during the ICT interaction. Typically, co-presence family time takes place in the families’ common areas (Tillmann and Hugger, 2014; Livingstone et al., 2011) when children do not want to be alone but want to spend co-present time with the family. Such situations are crucial in terms of the concept of ‘doing family’ because they allow for emotional and physical contact, meaningful casual conversations and collective experience that strengthen family bonding, even though they are not actively engaging in a shared activity (Tillmann and Hugger, 2014; Volda and Greenberg, 2009). Co-use activities contain shared movie evenings, family video/online gaming and communication via different digital devices. Based on investigations assessing the effects of co-using activities on family dynamics, a number of findings can be derived.

For instance, experiencing ICT actively together can shape family identity and a feeling of we-ness. While parents can learn from their children’s ICT experience (Sobel et al., 2017; Ulicsak and Cranmer, 2010; Aarsand, 2007), children enjoy that their parents are showing interest in things that are important to them (Wang et al., 2018; Sobel et al., 2017; Coyne et al., 2014; Ulicsak and Cranmer, 2010; Volda and Greenberg, 2009). Co-use can also serve as a springboard for conversations regarding (sensitive) topics and is, therefore, a way to put parental mediation into practice which can also strengthen children’s resilience (Coyne et al., 2014; Ulicsak and Cranmer, 2010). On the other hand, the quality and the amount of communication might be affected during active co-use (Hiniker et al., 2018; Lavigne et al., 2015). Whether this impact is positive or negative usually depends on specific characteristics of the activity.

As a result of using ICT for every-day communication purposes, the organisation has become more comfortable. For example, digital technologies help divorced parents to organise parenthood more easily (Ganong et al., 2012). Also, parents feel less worried when their children are available on their phones in the case of emergencies, which is also appreciated by children as long as parents do not proceed in a very controlling way (Hänninen et al., 2018; Devitt and Roker, 2009). Moreover, digital technologies can make communication for families with children who have special needs more accessible (Insensio, 2020).

Next to the effects of every-day mobile phone communication, more recent development like video calls, led to significant changes for families with non-resident family members. For these families, live video calls give them a chance to actively take part in family life (Taipale and Farinosi, 2018; Nedelcu and Wyss, 2016; Rudi et al., 2014; Gonçalves and Patrício, 2010; Tee et al., 2009). Consequently, non-resident family members are likely to feel more integrated into the every-day family life (Charalambides, 2019; Mickus and Luz, 2002). However, for family members who do not have access to ICT or who are lacking the skills required to apply the technology used for communication, online family communication might cause them to feel socially excluded rather than promoting family cohesion (Hänninen et al., 2018).

Even though there is considerable research on the effects of joint media engagement on family dynamics, some aspects have not yet been sufficiently explored. This research gap mainly concerns technical innovations in the last few years and how these developments are taken on by families for shared use. For example, prior research on the role of Internet-connected handheld devices and their consequences for family life was primarily related to family communication and organisation. Apart from that, we know very little about other possible family activities on handheld devices (e.g. joint gaming). For family gaming, most research has been done as a response to the game industry's shift from individual to shared video games from the beginning of the 21st century onwards. Today, one can tell that family gaming is still prevalent. Still, we do not know a lot about new family gaming trends in detail. Open questions are, what type of games and which devices families use for their shared gaming experience today. Furthermore, research is needed to examine the effects of the latest trends, such as smart homes, language assistants or Internet-connected toys on families. Even though digital content creation, like digital art or digital music, as another sort of family activity is not as prevalent as other activities, research is also somewhat unfamiliar with the impact of those activities on the family life.

2.2.2 The mediation of digital media consumption and conflicts within the family

The strategies parents put in place to guide and assist their children's ICT consumption are very well known. Referring to these publications, a classification into different **parental mediation styles** linked to children's ICT use emerged: (A) restrictive mediation (rules on time or content), (B) monitoring (control children's ICT activities nearby, after use or by control software), (C) active mediation (give advice, show interest) and (D) co-use, (use ICT together for parental purposes) (Nikken and Jansz, 2013; Livingstone and Helsper, 2008). Chaudron et al. (2018) introduced a fifth category, called (E) active distraction, a mediation strategy where parents try to undertake many activities together with their children or enrol them in a variety of extracurricular courses. On average, the following parental mediation patterns seem to be dominant in European families: Parental mediation starts as soon as children engage in ICT activities. For younger children who use ICT, parent's mediation appears to happen in a more restrictive and controlling way. Time and content restrictions are most common among children up to early adolescence (MPFS, 2016a; Holdampf-Wendel et al., 2014; Livingstone et al., 2011), although these rules are technically less controlled, as children grow older (Šmahel et al., 2020; Education Group GmbH, 2019; Livingstone et al., 2017; MPFS, 2016a; Livingstone et al., 2011). With decreasing technical limitations, simultaneously active mediation strategies begin to gain relevance (European Commission, 2019a; Chaudron et al., 2018). Teenagers experience less parental mediation, both in terms of active and restrictive mediation (European Commission, 2019a; Livingstone et al., 2014; Livingstone et al., 2011). Significant differences in the mediation styles can be observed between families with different socioeconomic backgrounds (Livingstone et al., 2015; Clark, 2013), personal attitudes (DIVSI, 2015; Lauricella et al., 2015), digital skills (Livingstone et al., 2015; Barron et al., 2019) and country norms (Chaudron et al., 2018; Helsper et al., 2013) (for details see Lorenz and Kapella, 2020). For example, in families with a higher socioeconomic status, parents are more likely to induce active rather than restrictive parental mediation methods (Livingstone et al., 2015). In addition to parents' mediation, also older siblings often take over an ICT mediation role for their younger siblings (Siibak and Nevsiki, 2019; Paus-Hasebrink et al., 2019; Plowman, 2015; Barone, 2012; Vinter and Siibak, 2012; Takeuchi, 2011; Gregory, 2001).

In the field of digital mediation, we can provide a comprehensive picture with **insights on the perspectives of parents and children**. From a parents' perspective, they often feel overwhelmed

due to fast-paced developments (Zartler et al., 2018; Chaudron, 2015; Haddon and Vincent, 2014). They lack key references from their own childhood which makes it hard to deal with the media use of their children adequately (Plowman, 2015; Mesch, 2006). In response to parents' lack of technological proficiency, children increasingly have started to guide and assist their parents' ICT consumption (Šmahel et al., 2020). The literature consistently shows that children widely follow and accept the rules set for ICT activities and agree that parental mediation is helpful (Zartler et al., 2018; Chaudron, 2015; Livingstone et al., 2011). Active mediation and co-use, as opposed to restrictive mediation, are linked to fewer conflicts between parents and children (Beyens and Beullens, 2017; Dubas and Gerris, 2002). Instead of worrying, children first want their parents to understand what is really going on in their online lives (Telia, 2019). At the same time, they want their parents to respect their privacy online (Telia, 2017; Levy, 2017; Haddon and Vincent, 2014; Devitt and Roker, 2009).

Using ICT within the family often requires negotiation that goes along with possible disputes. A child's amount of screen time is amongst the most significant source of parent-child conflicts. Interestingly from a parent's perspective, the amount of screen time is considered as more problematic than what the child is actually doing on the screen (Livingstone et al., 2018; Livingstone et al., 2017). The use of ICT when other family members are actively present (Oduor et al., 2016), for example, during shared mealtimes (Moser et al., 2016), is considered to be particularly annoying. Not only do parents judge their children's screen use during family time as inappropriate, children also find it frustrating if parents are distracted by their device during conversations (Zartler et al., 2018; AVG, 2015; Hiniker et al., 2015; Radesky et al., 2014).

2.2.3 The impact of ICT use on different dimensions of well-being

For most aspects studied, evidence on children's perspectives – and especially on the opinions of preschoolers – is scarce. For example, only a few scholars have tried to grasp children's idea of the risks and opportunities they face online. This might be one reason why the existing evidence on the well-being consequences of children's and young peoples' ICT use is risk-driven. To take the complexity of risks and opportunities associated with the use of ICT into account, Lorenz and Kapella (2020) rely on a conceptual framework introduced by The Organisation for Economic Co-operation and Development (OECD) (2019a), which explains the well-being impacts of the digital transformation on individuals. The authors adapt the OECD well-being framework for their purposes and extend it by using the Digital Competence Framework of the European Commission (2019). As a result, a framework is obtained in which children's use of ICT is considered to affect five dimensions of their well-being, namely (1) ICT access, (2) information and data literacy, (3) communication and collaboration, (4) new skills and content creation and (5) safety. The overall effect of a child's ICT use on a specific dimension of well-being depends on the interplay of different aspects of activities that are assigned to this but also other dimensions.

Dimensions: (1) ICT access and (2) Information and Data literacy (IDL) and (4) new skills and content creation

Having access to digital technologies is the prerequisite to being affected by the positive and negative effects of ICT in the first place. Today only minor inequalities regarding children's access to digital technologies exist which implies that the ICT access per se is not a compelling source for a digital divide anymore (Paus-Hasebrink et al., 2019; Mullis et al., 2017; DIVSI, 2015). However, the inequality of digital use and digital competencies (also referred to as 'second-level' digital divide) persists (Ronchi and Robinson, 2019; Hargittai, 2002). Young people from higher socioeconomic backgrounds are more likely to use the Internet to look up practical information or read the news (OECD, 2016), and they acquire a more advanced level of digital literacy (Fraillon et al., 2019). Children who have obtained a certain degree of IDL can leverage the benefits of the extended information available online. They can embed reliable online information into their existing body of knowledge and make active use of it. They know how to obtain the necessary information to acquire and then apply new skills, e.g. by using instruction videos or online forums (Telia, 2017), to create new and safe (digital) content. Using digital technologies in this way can encourage children's creativity (Ito et al., 2019). On the other hand, children lacking IDL might not be able to verify the content accuracy of online resources

and thus are at risk to take up fake news and incorrect information.

Dimensions: (3) communication and collaboration and (5) safety

From children's and young people's perspective, building new friendships is one of the most important benefits of using ICT. Especially children who feel lonely in the offline world can take advantage of connecting with like-minded people online who share their interests which can help them to feel more accepted (Telia, 2018; Dedkova, 2015). However, meeting new people on the Internet also goes hand in hand with possible risks, associated with psychological, physical or sexual abuse. Especially meeting people face-to-face with whom children first came into contact on the Internet, is considered as a potential source of harm (Šmahel et al., 2020). Other examples of possible psychological distress stemming from online interactions are online bullying (Hamm et al., 2015; Nixon, 2014; Kowalski et al., 2014) and the exposure to harmful content (Šmahel et al., 2020; Chaudron, 2015).

The overall health outcome for children who use digital technologies is highly conflicting. Meta studies suggest that there is a small positive correlation between children's and young people's use of screen time – the standard way to assess media use – and unfavourable psychological results. However, many studies are of low quality and only show correlational rather than causal relations (Orben, 2020; Hancock et al., 2019). Also, focussing on screen time to measure the effects of ICT falls short. Researchers need to move beyond screen time and capture what children are precisely doing on their devices to assure reliable results (Reeves et al., 2020). Even though the effects of a marginal increase in children's and young peoples' screen use are conflicting, when it comes to excessive use, a clearer picture emerges. Unfavourable outcomes that researchers warn against addictive Internet use are manifold, including social, psychological or academic difficulties (Neverkovich et al., 2018).

2.3 ICT and children's leisure time

2.3.1 Parental involvement

Parental attitudes towards the use of ICT by their children and parental involvement, in general, is a central issue examined in relevant studies. This is undoubtedly linked to online safety issues. Still, it also involves issues related to meaningful use of time and general well-being of children. Álvarez et al. (2013) examine the impact of parental attitudes and parenting dimensions on the overall regulation of ICT use. The authors define parental attitudes as 'ideas about who decides what the child is to see on the Internet and motivations for Internet use' (p. 69). Drawing on Baumrind (1991), Álvarez et al's (2013) focus on control/demandingness, defined as "the extent to which parents desire children to become integrated into the family whole, by their maturity demands, supervision and disciplinary efforts and willingness to confront the child who disobeys" (Álvarez et al., 2013: 70) and warmth/responsiveness, defined as "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to the child's special needs and demands" (Álvarez et al., 2013: 70). In addition, Álvarez et al. (2013) examine issues such as assessment of time, concerns about content, and guidance about ICT use and developmental adequacy. Their study concludes that differentiations exist according to the parent's age, education and place of residence, mirroring the variables that modulate the parents' digital divide.

Yelland and Neal (2013) discuss the notion of the digital divide as it has been developed within the relevant literature. However, they opt for a reconceptualization of the digital divide away from a focus on access to technology to one where opportunities for social inclusion are at the forefront of consideration. Their data (surveys, interviews and focus groups) reveals that all family members felt that the ownership of a computer-enabled them to feel more confident about their active participation in every day educational, social and community activities. Therefore, they provide evidence that ICT use enhances social inclusion of both children and their parents with regard to three themes pertaining to increasing participation: connecting with society, increased social opportunities, and types of use.

With regards to social context, the comprehensive EU kids online research (Smahel et al., 2020) shows that advice about safe Internet use is received from parents, friends or teachers (80%),

while between 10%-20% report never or hardly ever having received any safety advice from parents, teachers or friends. The survey also asks about parental control measures such as software for filtering, tracking applications or activities or location/GPS tracking. Only a minority of children report that their parents use any of these types of technological control. It is important to note that according to the report, about one in ten children never feel safe online. Contrary to what might seem to be the case, parents do not often use restrictive mediation. Moreover, parents are not always a source of support: in most of the countries where the survey was conducted, up to a third of the children says their parents had published something online about them without asking them.

2.3.2 Risk areas and well-being

As mentioned above, online safety and potential risks are of utmost importance for parents and society at large. Valcke et al. (2010) follow the parental control/warmth distinction as defining dimensions of parenting styles when it comes to describing parent roles in Internet usage by children. Moreover, they identify five Internet risk areas: it can have a negative impact on social relations; a negative emotional impact due to unwanted exposure to pornography, violence etc.; a negative impact on physical health, such as obesity, reduced concentration and muscle pain; a negative impact on time management, resulting in Internet addiction and neglect of school tasks and family activities; and vulnerability to consumerism or commercial exploitation. The authors conclude that one regulation schema parents have is that of restricting time spent online, blocking access and the use of rules, followed by supervision, while in the warmth dimension includes communication and surfing together or suggesting specific websites.

In a similar vein, George and Odgers (2015) reviewed seven commonly voiced fears about the influence of mobile technologies on adolescents' safety: cyberbullying and online solicitation, social development, peer relationships, parent-child relationships, identity development, cognitive performance, and sleep. In their overview, they distinguish three sets of findings. First, with some notable exceptions (e.g. sleep disruption and new tools for bullying), most online behaviours and threats to well-being are mirrored in the offline world, such that offline factors predict negative online experiences and effects. Second, the impact of mobile technologies are not uniform, in that benefits appear to be conferred for some adolescents (e.g., skill-building among shy adolescents), whereas risk is exacerbated among others (e.g., worsening existing mental health problems). Third, experimental and quasi-experimental studies that go beyond a reliance on self-reported information are required to understand how, for whom, and under what conditions adolescents' interactions with mobile technologies influence their still developing social relationships, brains, and bodies.

Kowalski et al. (2014) provide a critical review of the existing cyberbullying research. The authors, departing from the assumption that "the cyberbullying literature lacks a solid theoretical foundation", suggest a general aggression model (GAM) that "may help us understand the personal and situational factors at play" (p. 1110). They also highlight the relationship between cyberbullying and traditional bullying, as well as relationships between cyberbullying and other meaningful behavioural and psychological variables. Perpetrators of cyberbullying often perceive themselves to be anonymous (deindividuation). With cyberbullying, there is no direct way for perpetrators to know the effect of their behaviour on the victim. Thus, chances for empathy and remorse are significantly reduced.

In the extensive EU Kids Online survey (Smahel et al., 2020), it is demonstrated that the proportion of children reporting negative online experience, as in upsetting, uncomfortable, or scary instances, rises with age, while there are few or no gender differences in most countries. Other negative experiences mentioned were those of hate messages, virus/spyware, personal data misuse and using too much money on games or apps, sexting, communicating with unknown people, etc. The survey also asks about excessive Internet use and measures it based on five criteria: going without eating, sleeping, spending less time with family, friends or doing less schoolwork because of time spent online. However, most of the children in all countries do not experience any of the criteria for excessive Internet use.

From a different than the parental perspective, Zilka (2017) examines the awareness of safe online surfing by children and adolescents themselves. She also examines the degree of exposure of children and youth to positive and negative aspects of the Internet. The mixed-method study

illustrates the dual potential of Internet use within the context of eSafety, as seen through the eyes of children and teenagers. Characteristics of use of the Internet are liable to increase the danger to and the bullying of youth and by youth in the digital domain. It also demonstrates the promises of using the Internet for productive learning and leisure activities. Findings show that the children and teenagers who participated in the study reported a medium-high level of awareness. Issues that participants were concerned about included avoiding contact with strangers and cyberbullying, not necessarily by strangers, but also by friends.

Twenge et al. (2019) report that adolescents in the USA spend less time on in-person (face-to-face) social interaction with peers, including getting together or socialising with friends, going to parties, going out, dating, going to movies, and riding in cars for fun. Their findings suggest that time displacement occurs at the cohort level, with in-person social interaction declining as digital media use increased, but not at the individual level, where in-person social interaction and social media use are positively correlated.

Przybylski and Weinstein (2017) used a preregistered plan for analysing data collected from a representative sample of English adolescents ($n = 120,115$). Their data indicate that the links between digital-screen time and mental well-being vary as a function of when digital technologies are used (i.e., weekday vs. weekend), suggesting that a full understanding of the impact of these recreational activities would require examining their functionality among other daily pursuits. Overall, the evidence indicates that moderate use of digital technology is not intrinsically harmful and may be advantageous in a connected world. The findings inform recommendations for limiting adolescents' technology use and provide a template for conducting rigorous investigations into the relations between digital technology and children's and adolescents' health.

Orben and Przybylski (2019) argue that there is little clear-cut evidence that screen time decreases adolescent wellbeing, and most psychological results are based on single-country, exploratory studies that rely on inaccurate but popular self-report measures of digital-screen engagement. Their study includes time-use-diary measures of digital-screen engagement, using both exploratory and confirmatory study designs to introduce methodological and analytical improvements to a growing psychological research area. The authors find little evidence for substantial negative associations between digital-screen engagement — measured throughout the day or particularly before bedtime — and adolescent well-being. Similarly, McCrae et al. (2017) provide a systematic review of empirical research on the relationship between social media use and depressive symptoms in the child and adolescent population. They end up with 11 cases. Their findings indicate that there is a degree of correlation between social media use and depressive symptoms in young people, however with no clear causality, and stress the importance of qualitative studies to follow up.

2.3.3 Digital practices

Even if (sometimes) urgent questions stemming from parental and societal concerns have driven much of the research conducted on the everyday use of digital media by children and adolescents, other exploratory studies have opened up the field of (digital) leisure providing evidence and knowledge on digital practices deployed by children and adolescents. In one of the early comprehensive attempts, Ba et al. (2002) completed a one-year comparative study of children's use of computers in low- and middle-income households. They defined digital literacy as a "set of habits through which children use computer technology for learning, work, socializing, and fun" (Ba et al. 2002: 6). Their findings indicate that both groups of children used the computer to do schoolwork. Many children with leisure time at home also spent 2 to 3 hours a day communicating with peers, playing games, and pursuing creative hobbies. When solving technical problems, the children from low-income homes relied more on formal help providers such as Computers for Youth staff and schoolteachers. In contrast, the children from middle-income households turned to themselves, their families, and their peers. All the children developed basic literacy with word processing, email, and the Web. Not surprisingly, those children who spent considerably more time online developed more robust skills in online communication and authoring.

The results also show that children's digital literacy skills are emerging in ways that reflect local circumstances, such as the length of time children had a computer at home; the family's ability to purchase stable Internet connectivity; the number of computers in the home and where they

are located (bedroom or public area); parents' attitudes toward computer use; parents' own experience and skills with computers; children's leisure time at home; the computing habits of children's peers; the technical expertise of friends, relatives, and neighbours; homework assignments; and the direct instruction provided by teachers in the classroom. The findings highlight issues impacting social, school, and assessment policy and practice. The authors develop a digital literacy analysis model based on 5 central digital literacy components: computing for a range of purpose, understanding the function of and ability to use common tools, communication literacy, Web literacy, and troubleshooting skills.

More recently, Bjørgen and Erstad (2015) have focused on how young students (9-13-year olds) make sense of the connections and disconnections of digital practices between school and leisure, studying how students' conceptions of digital skills and their positional identities are defined across school and home. The authors argue that the issue of identity must be understood as connected to digital literacy. The authors identify four themes in the transfer of digital practices, starting with the differences and similarities between school and leisure practices and how informal literacy practices can blend into formal literacy practices. A second theme is that school introduces young students to new digital practices, while some school practices are defined as irrelevant to leisure (third theme). Finally, digital literacy and competence can change children's status within the family. More precisely, "parents might position their children as experts in digital technology, and traditional parent-child relationships might change", suggesting that digital practices learned in school can provide children with "new roles as mentors and experts" (p. 122).

In a similar vein, Valdemoros-San-Emeterio et al. (2017) aimed to identify the relationship between digital leisure experiences and perceived family functioning in post-compulsory secondary education Spanish students. The sample was composed of 1.764 15-18-year-old Spanish young people. Their findings suggest that young people give importance to digital leisure activities, highlighting social network participation, playing videogames and surfing on the Internet. Cohesion, flexibility and family functioning are healthier when children do not point to any digital activity into their preferred leisure practices. The authors define digital leisure as leisure opportunities involving digital technologies, for instance, consoles, mobile phones, the Internet, computers, iPad, tablets, MP3, or eBooks, etc. that have "innovated the experience of leisure by adding connectivity, interactivity, hyper-textuality, anonymity, convenience, ubiquity" (p. 100). The meaning assigned by youth to many digital activities is not only that of entertainment but, also, of the construction of their personal and social identity. Types of leisure activities are classified into eight topics: seeking specific information on the Internet; surfing the Internet without a particular goal; writing one's own blog or Website; sharing information (videos, photos, presentations etc.); participating in chats, discussion forums, or virtual communities; social networks (Facebook, Tuenti, Twitter, etc.); playing video games and online gambling. Their findings indicate that 30% of Spanish youth reported one digital activity among their three most important leisure practices (social networks; games; surfing the Internet). Their study reveals that Spanish students of Upper Secondary Education value digital activities in their leisure time, although the importance varies according to the type of practice, e.g. participation in social networks is particularly evaluated. The authors also studied family functioning, indicated by the level of functionality or dysfunctionality perceived in the family system, defined as the result of the mean of the balance/imbalance between family cohesion and flexibility. They conclude that family functioning is healthier if the adolescents perform a single digital leisure activity than if they perform two activities. This reveals that lower digital consumption in children and adolescents is linked to families with stronger emotional ties among family members, possible emotional reciprocity, family engagement, mutual respect between parents and children, as well as the establishment of "internal boundaries" and alliances in intergenerational relationships.

In another social context, that of New Zealand, Grimley (2012) investigated two groups of school-aged learners (10-12 years - 224 children), differentiated by their digital immersions level (high or low immersion - 24 lowest and 24 highest), and defined by their scores on a leisure-time digital immersion questionnaire (digital immersion as the relative time students indicated they spent on digital activities overall). The study's general aim was to explore cognitive and educational differences between the two groups. Each group completed tests of attention and reasoning (verbal and non-verbal) and took part in two educational tasks where their learning behaviours were observed. Findings indicate that high digital leisure-time immersion is predictive of attentional inconsistency and that high digital consumption behaviour is predictive

of low literacy levels. Further, low digital immersion females and high immersion males perform poorly in an Internet research task. However, all students were poor regarding digital information literacy skills. The results give rise to two recommendations for parents and educators of millennial children: educators should encourage children to use technology in an active way through creation and communication but moderate the amount of consumption behaviour and put more time into educating children about digital information literacy.

At the EU level, the EU Kids Online study (Smahel et al., 2020) focuses on aspects of access, practices and skills, risks and opportunities and social context. The study reports that for most children across Europe, smartphones are now the preferred means of going online. This often means that they have “anywhere, anytime” connectivity, with the majority of children reporting using their smartphones daily or almost all the time. The time that children spend online each day has nearly doubled in many countries, e.g. from about one to three hours per day in Spain, and about two to three-and-a-half hours in Norway (from the 2010 findings). In some countries, girls are slightly more likely than boys to access the Internet from their smartphones daily. On most measures of access, there are few gender differences, except that overall, boys spend a little more time online than girls. Between 3% and 15% of the children connect through a wearable device and 1% to 18% via a connected toy. YouTube is becoming increasingly popular, and with national social networking sites giving way to Instagram and other prominent apps. Watching videos, listening to music, communicating with friends and family, visiting a social networking site and playing online games top the list of activities that children do on a daily basis. Interestingly, while there are few significant gender differences, there are considerable country differences: half of the Spanish children and slightly over 40% of those in France, Germany and Malta never or hardly ever visit a social networking site (Smahel et al., 2020). This should be seen in comparison to the issue of social inclusion presented in section 2.3.1. We might question if social inclusion in these countries operates somewhat differently as the percentage of those that have not visited a network site is so high.

2.4 ICT in/and education

ICT is playing an essential role in workplaces, business, entertainment and education. In the educational area, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills, so they learn the notion of using ICT as a tool for lifelong learning. Furthermore, ICT improves teaching and learning and its importance for teachers in performing their role as creators of pedagogical environments. ICT helps teachers to present their teaching attractively and adaptive for learners at every level of educational programs (OECD, 2019).

In recent years, various studies have been conducted to examine, among other aspects, how schools are equipped in the area of ICT, how ICT are used in everyday school life, and what the estimates of the use of ICT are. In the context of the present review, an overview of the various studies on ICT in/and education will be given. For this purpose, the availability of ICT in school, the use of ICT in education, the computer and information literacy (CIL) of students and the teachers’ experience with ICT will be our main focus.

2.4.1 Availability of ICT in education

In order to be able to participate successfully in the social and professional life of the 21st century, competent handling of digital media is elementary and has become an increasing focus of school efforts in recent years. In everyday school life, sufficient equipment with digital media is considered necessary in order to support students in their ICT skills. The assessment of ICT equipment situation in schools is usually based on a description of the quantity of equipment available for teaching and learning purposes.

The European Commission’s “Survey of Schools” in 2012 found that, with regard to ICT infrastructure, the average European number of class eight students sharing a computer (computer is defined as a desktop or laptop, netbook or tablet computer, whether or not connected to the Internet) is five. While Norway, Denmark and Spain have a 3:1 ratio, the ratio for Estonia and Belgium is 4:1. Greece is ranked second to last, in the bottom group of countries, with 21 students per computer. Romania ranks at the low end of the scale on this indicator with 13

students per computer (European Commission, 2013). With a view to grade 4 there are on average in the European Union seven students per computer. Especially Norway, Denmark and Spain have a good number of students to a computer (3:1). Estonia (5:1), Luxembourg (6:1) and Finland (6:1) having a better number of students to a computer than the EU average. For Austria, the ratio is 9:1, and for Romania, it shows a number of students to computers of 17:1 (European Commission, 2013). Similar findings were also found in the 2nd survey. The results of the 2nd Survey of Schools show that less than 1 out of 5 of European students attend schools which have access to high-speed Internet above 100 mbps. In addition, the findings show substantial differences between and within European countries with the Nordic countries coming out as clear frontrunners regarding the deployment of high-speed Internet in schools, but also in terms of being digitally equipped and with other countries and schools located in villages or small cities, which are those that are clearly lagging behind (European Commission, 2019).

As well as the European Commission, the international computer and information literacy study (ICILS, 2018) examined how many students on average share digital devices (desktop computers, laptops/notebooks and tablet devices alike) that are available at schools in different countries (Fraillon et al., 2019). The result of the International Computer and Information Literacy Study (ICILS) 2018 study shows that the European average is 8.7:1. In Finland, an overall average of 3.4 students share a digital device. Luxembourg (4.5:1) and Denmark (4.6:1), as well as France (7.2:1), are above the European average together with Finland. Germany shows a ratio of 9.7:1. A noticeably lower result is found in Italy (14.3:1) and Portugal (16.9:1) (Eickelmann et al., 2019; Fraillon et al., 2019).

In the context of Information Technology (IT) equipment for schools, it seems increasingly important to develop concepts that are continuously and sustainably developed along with criteria. In this context, the European ESSIE study (European Commission, 2019b) with its sub-study on HECC (Highly Equipped and Connected Classrooms) may offer an approach that addresses both schools that are just beginning to develop technology and schools that already have developed IT equipment and equipment concepts. Apart from the school approach chosen, it seems important, both in the light of the developments and experience in recent years, to point out that concepts relating to IT equipment should be developed across schools and should support schools where they are at the stage of their work and development.

2.4.2 Use of ICT in education

The use of ICT in school education and learning contexts has been considered at national and international level for many years (Voogt and Knezek, 2008). When ICT is integrated into teaching and learning contexts, this has often been done with the aim of supporting subject-specific learning and the development of cross-curricular competencies and improving the quality of teaching and learning (Eickelmann and Schulz-Zander, 2010). Especially in the subject-specific contexts, for example, in the teaching subjects, there are many opportunities to learn how to use digital media competently (Tulodziecki et al., 2019). The critical point of departure here is the assumption that the use of new technologies offers high potential in itself for developing knowledge and skills in the area of CIL (Fletcher et al., 2012; Fraillon et al., 2013). According to this, specific and reflected handling of technologies and computer-based information can be supported in school. The use of ICT in education can provide a motivating and interesting teaching environment, contribute to equal opportunities, enable and guarantee social participation through specific competence development, and prepare students for the professional world (Plomp et al., 2009). Due to rapid technological developments, the aspects of the use of ICT in education is becoming increasingly relevant, resulting in new developmental tasks and requirements for the educational systems (Cox, 2008; Greenhow et al., 2009).

Looking at the use of ICT in schools and education, for example, the European Commission (2013) concluded that on average in the EU more than half (53%) of grade eight students use desktop computers at least once a week. The comparison between the countries considered shows that Bulgaria has the highest proportion of eighth-grade students (71%) who indicate that they use a school computer/laptop for learning purposes during lessons at least weekly. The percentages for Spain (52%), Estonia (51%), Romania (50%), Belgium (47%) and Austria (40%) are under the European average.

Based on the ICILS 2018 study, the use of digital media at school was examined from the per-

spective of eighth-graders. The study revealed a usage rate of 45.1 percent for the EU comparison group in terms of weekly use of digital media for school-related purposes. In a comparison of the countries, Denmark especially stands out with a rate of 90.9 percent. While Finland has a weekly frequency of use of 58.1 percent, Italy (23.1 %) and Germany (22.8 %) show a similar average value. Looking in more detail at the daily use of ICT by students at school for school-related purposes, Denmark is again the best performer with an average of 81.0 percent. The averages for France (8.1%), Italy (7.2%) and Germany (4.4%) are significantly below the EU average (Schaumburg et al., 2018; Fraillon et al., 2019).

The overarching internationally oriented analyses of Sakamoto (2018) indicate that the use of ICT in schools has the potential to improve the CIL of students, especially the ability to collect and evaluate information. In this sense, according to Sakamoto (2018), the use of digital media at school can be more effective than use at home. However, use at home also has a significant effect on students' competences.

Numerous studies have investigated the connection between ICT use in schools and the achievement of professional skills (Eickelmann and Schulz-Zander, 2010; Fuchs and Wößmann, 2004; Song and Kang, 2012). For example, a supplementary study to PISA 2012, which examined the acquisition of digital literacy and the quality of students' Internet-related navigation and evaluation skills, showed that students who used the Internet at school once or twice a month achieved better results than students who never used the Internet at school (OECD, 2015). This is supported by the work of Pagani, Argentin, Gui and Stanca (2016) who argue that digital skills may allow for easier access to a wide variety of learning tools. Further Pagani and colleagues (2016) who analysed PISA 2012 data suggest that digital skills:

can provide more motivation to learn for low achievers than for high-performing students. The ability in using the Internet may represent an alternative source of opportunities that becomes particularly important when other, more traditional, sources are not effective in providing capital-enhancing experiences. Hence, we expect that the potential gains of digital skills are larger for low achievers than for those whose academic performance is already high (150-151).

Research is increasingly suggesting that ability as opposed to access represents a crucial determinant of digital inequality (see for example van Deursen and Helsper, 2015; van Deursen, van Dijk and ten Klooster, 2015). Thus, "stronger effects of digital literacy for students with lower school achievement and socio-economic background suggest that programmes aimed at increasing Internet information skills among the youth can play an important role in reducing educational inequality and, in turn, lowering inequalities in the labour market" (Pagani et al., 2016: 157).

2.4.3 Computer and information literacy of students (CIL)

With the increase of ICT in everyday life, many countries have recognized the importance of the implementation of digital media in schools and education and the role of computer and information literacy (CIL) (Kozma, 2003; Voogt et al., 2013). In recent years, the use of ICT by students to support learning and acquire skills for their future productive participation in work and society has been reaffirmed and established in policy statements (E-learning Nordic, 2006; MCEETYA, 2007). The interest of skills related to ICT is evident in the assertion by the European Commission that CIL is "increasingly becoming an essential life competence and the inability to access or use ICT has effectively become a barrier to social integration and personal development" (European Commission, 2008: 4). Ferrari (2012) describes digital literacy as a requirement and the right of citizens to be able to live and perform in today's society. Ferrari points out seven key competence areas: information management, collaboration, communication and sharing, creation of content and knowledge, ethics and responsibility, evaluation and problem-solving, and technical operations. In the ICILS Study, CIL is defined as referring to "an individual's ability to use computers to investigate, create and communicate in order to participate effectively at home, at school, in the workplace and in society" (Fraillon et al., 2013: 17).

To outline students' skills and learning progress, assessment programs have been developed at the international level to determine the extent to which students are developing adequate levels of ICT skills. Various projects and studies, like the IEA International Computer and Infor-

mation Literacy Study (Fraillon, 2014; Fraillon et al., 2019) and the Assessment and Teaching of 21st Century Skills (Griffin et al., 2012), point out a growing interest regarding the assessment and evaluation of adequate skills for today's society (Ainly, 2018). Selwyn (2009) describes students' use of the Internet as "passive consumption of knowledge rather than active creation of content" (Selwyn, 2009: 372). According to this, the implementation of digital media and the teaching of CIL to support students' skills plays an important role in school and teaching (OECD, 2010).

The study ICILS 2018 measures the computer and information literacy (CIL) of students in the participating countries and education systems for the second time after ICILS 2013. The competence levels are divided as follows: The lowest competence level I comprises rudimentary receptive skills and very simple application skills such as clicking on a link or sending an e-mail. Competence level II describes the competent handling of basic knowledge as well as very simple information handling skills, for example, simple document processing. Students who reach Competence Level III can use guidance to find and process information and create simple information products (such as simple text documents). Competence level IV covers the independent determination and organisation of information and the independent creation of elaborate documents and information products. Finally, the highest competence, level V, describes very elaborate computer- and information-related competencies, which include the confident evaluation and organisation of independently determining information and the creation of information products with demanding content and form (Senkbeil et al., 2019; Fraillon et al., 2019).

In an international comparison, the eighth-graders in Denmark reach the highest average achievement level with 553 scale points, and the lowest average achievement level shows Kazakhstan with 395 points. Furthermore, eighth-graders in Finland achieve an average of 531 and in Germany 518 scale points in CIL. Italy achieves an average rate of 461 scale points, which is below the European average of 509 points. Concerning the five competence levels in ICILS 2018, the EU comparison group shows an average of 1.5 percent of the students reaching the highest competence level. These eighth-graders are able to determine information independently, evaluate it reliably and create information products that are sophisticated in terms of content and form. The corresponding proportion in Germany is 1.9%, in Finland 2.7% and in Denmark 3.1%, which is above the EU average. For Portugal (1.1%), France (1.0%) and Italy (0.2%), the values are below the EU average (Fraillon et al., 2019; Eickelmann et al., 2019).

Student background

Different studies have shown that the background characteristics of students have some influence on the CIL of students. For example, students with better access to ICT and in general with a higher socioeconomic status achieved better CIL results (Fraillon et al., 2019; Australian Curriculum Assessment and Reporting Authority [ACARA], 2015; Claro et al., 2012; Hatlevik et al., 2015). Aesaert et al. (2015) argue in this context that, in addition to the socio-economic characteristics of students, the attitudes of their parents to and their use of information technology must also be taken into account. Regarding CIL results differentiated by boys and girls, a number of studies report that girls have higher CIL than boys (Fraillon et al., 2019; Australian Curriculum Assessment and Reporting Authority [ACARA], 2015). However, there are also studies that report the opposite or report no difference at all (Rohatgi et al., 2016). The use of ICT can improve teaching by increasing student motivation and supporting academic achievement if it is well integrated into the teaching and learning process (OECD, 2015, 2016). In this context, the integration of ICT such as computers, tablets or other digital devices in schools can help students, including those who do not have access to ICT at home, to learn the ICT skills needed to participate in the knowledge societies of the 21st century. In addition, the use of ICT can help to overcome geographical isolation by connecting students, teachers and schools in terms of learning resources.

The level of students' CIL varies substantially according to age, education levels and gender (van Dijk, 2005; Warschauer, 2003). Therefore, increased access to ICT risks also to increase the digital divide if not provided equally, particularly in terms of access to knowledge on digital skills - and learning with them. With this the digital divide between individuals but also between countries and regions is increasing in Europe (European Commission, 2013, 2019). The most explanatory criterion of social background, as well as more detailed analyses showed, was the number of books in the household as an indicator of cultural capital (Hatlevik et al., 2018).



Based on national and international results, the ICILS 2013 study confirmed the comparatively high social disparities in CIL among students of different age groups (Aesaert et al., 2015; Australian Curriculum Assessment and Reporting Authority [ACARA], 2018; Claro et al., 2012; Gui and Argentin, 2011; Hatlevik et al., 2015). Furthermore, the mentioned studies consistently show the importance of cultural capital in explaining differences in background. The focus is on social characteristics of background, cultural resources (e.g. the provision of cultural goods) and cultural practice in the family (e.g. support for the acquisition of 'digital' skills and parental control of digital media use), which play a particularly important role in the acquisition of CIL (Nikken and Jansz, 2013; see also section 2.2 in this review).

Socially induced different patterns of use can be identified across all age groups, i.e. not only for children and adolescents but also for young adults and older adults (Harris et al., 2017; Hargittai, 2010; Zillien and Hargittai, 2009; van Deursen et al., 2015). Overall, it is shown that socially privileged children and young people tend to prefer instrumental-oriented uses (e.g. for seeking information or learning) and socially disadvantaged children and young people tend to prefer hedonistic and socially interactive uses (e.g. for entertainment or self-expression) (Hollingworth et al., 2011; Senkbeil, 2018; Zillien and Hargittai, 2009). In addition, a series of studies show that socially privileged young people not only have a longer period of experience in using digital media and more considerable expertise in dealing with them but also realise a broader spectrum of usage options. For example, they are more capable of using Internet services for their private and professional advancement (e.g. exploring career options, obtaining information about financial services) as well as for active participation and articulation of interests in digitally mediated discourses than socially disadvantaged young people (Kahne et al., 2012; Zillien and Hargittai, 2009).

With the EU Kids Online Survey, it could be identified that children of parents who were less educated or did not use the Internet were a significant group that experienced higher risk and were more upset by disturbing online material (Livingstone et al., 2011).

There is also evidence that computer skills are higher among students in more advanced years than in earlier years. For example, the Australian National Assessment of ICT Literacy used a linked scale covering grades 6 and 10, making it possible to compare students' performance at 4-year intervals (Australian Curriculum Assessment and Reporting Authority [ACARA], 2015). Kim and Lee (2013) also report that the computer skills of students in the third year of secondary school are higher than those of students in the first year of secondary school. These findings may perhaps not be so surprising given that age, experience and educational level are important variables for the use of ICTs such as computers and the Internet (van Deursen, van Dijk and Peters, 2011). Moreover, van Deursen and colleagues (2011) argue that "the higher educated part of the population is characterized by high levels of computer ownership, the availability of Internet access at home, high levels of broadband connectivity, and by spending a more than average time online" (p. 129).

2.4.4 Teachers' experience with ICT

The use of ICT in school and teaching changes the teaching and learning process in which students deal with knowledge in an active, self-directed and constructive way (Voogt et al., 2013). ICT is not only seen as a tool that can be added to or used as a replacement for existing teaching methods. Rather, ICT is seen as an important tool to support new teaching and learning methods. In particular, it is essential to use ICT in a way that will develop students' skills for collaboration, communication, problem-solving and lifelong learning (Voogt et al., 2013). In this context, teachers have a unique role as mediators, as they have to understand the potential of the role of ICT and also have the ability to use ICT in teaching. Teachers should, therefore, have knowledge, skills and a positive attitude towards the implementation of ICT in schools (Ratheswari, 2018; Davis et al., 2013; OECD, 2019a).

Most teachers have been familiar with the use of ICT for teaching and learning for some years but still use it first and foremost for preparing their teaching (European Commission, 2013). It shows, that at EU level 75 percent of teachers have been using computers and the Internet at school for about four years or more. This has risen in the 2nd Schools Survey to 90 percent (European Commission, 2019). In both surveys, it was found that teachers use ICT much more frequently to prepare their lessons and that the use of ICT does not, however, require a high

level of expertise (European Commission, 2013, 2019). Especially in the field of social media, teachers consistently have lower levels of expertise than in the operation of ICT equipment in general. The COVID-19 outbreak in 2020 can have had an effect on this situation, given that much of the teaching was moved online as schools closed. A recent international online survey by Gudmundsdottir and Hathaway (2020) focusing on Teachers' Readiness Online (TRIO) in which the researchers collected perspectives from 1186 teachers about their experiences related to online teaching in the early weeks of COVID-19 school closures showed that teachers' agency was activated in the times of the COVID-19 pandemic. The findings highlight that despite teachers' inexperience and unpreparedness for online teaching, they were moderately prepared to use various digital tools and willing to make online learning work for them and their students (Gudmundsdottir & Hathaway, 2020).

According to the findings of recent decades, the implementation of digital media continues to be shaped by the attitudes and behaviour of teachers towards digital media (Eickelmann and Vennemann, 2017; Ertmer, 2005; Tondeur et al., 2019). When looking at the perception of the potentials in an international comparison within the framework of ICILS 2013, it became clear that the attitudes of teachers varied between the educational systems.

Mueller et al. (2008) concluded that teachers with positive teaching experience in the use of computers are more likely to use computers in class. In addition, self-assessment of computer-related teacher competencies has emerged as a key determinant of computer use in teaching (European Commission, 2013; Fraillon et al., 2014; McKenney and Roblin, 2018; Siyam, 2019). A positive attitude of teachers towards the use of digital media in teaching was also identified as a significant predictor of the use of digital media in teaching (Celik and Yesilyurt, 2013; Holmberg, 2019; Lopes, 2018).

The findings of international studies make it increasingly clear that teachers can usually only use digital media in such a way that they make a quality contribution to the design of schools and lessons if they have been appropriately prepared for the use of digital media during their own teacher education (Albion and Tondeur, 2018; Eickelmann et al., 2019; Tondeur et al., 2019). Particularly in view of the fact that the aspect of teacher education is an essential factor within the implementation of digital media in schools and education in general, the relevance and effectiveness of teacher education related to digitalisation is being continuously expanded internationally (e.g. also by the TALIS study; OECD, 2019b).

2.5 ICT and transformations of civic participation

2.5.1 Social media, social relations, and the digital divide

For young people today, the Internet and social media play a pivotal role in accommodating and often shaping communication (Das and Sahoo, 2012). Cyberspace allows for the development of social relationships and promotes the ability for young people to participate in social and civic life as well as contributing to a sense of *wellbeing* and *belonging* (Hamburger, 2008; Kent et al., 2003). Social media technologies offer young people the prospect of facilitating new modes of communication, including civic participation which correspond closely with current youth cultures associated with networked young citizens. For many young people, social media enhances information flows between them and various organisations (Burt and Taylor, 2003) and can expose them to a range of social causes (Waters, 2003).

In Estonia, for example, based on the 2016 Eurobarometer data 51% of Estonian youths (compared to 46% average across Europe) thought social networks allow everyone to take part in public debate and thus represent progress for democracy and 23% (compared to 27%) thought that social networks represent a risk (Allaste and Saari, 2019). Similar results are discussed by Lemire et al. (2008) showing that being engaged in social media can dissolve the problems of physical participation for individuals with mobility barriers including those related to age and socioeconomic constraints. While the data from Allaste and Saari (2019) indicates a higher than average belief in the democratic capacities of social media among Estonian youths, Tiidenberg and Allaste (2016) found that the percentage of youth, who consider social media to be an efficient tool for influencing politics is lower in Estonia (24%) than in, for example, the Nordic countries (Finland 32%, Denmark 44%) (Tiidenberg and Allaste, 2016).

Tiidenberg and Allaste (2016) analysed data from the Seventh Framework Programme (FP7) project Myplace, focusing both on the area that is primarily ethnic Estonian and an area that is primarily minority Russian, they found that youths' civic engagement and political participation online was different in these two areas. For example, 21% of the youths in the dominantly Estonian area said they had signed petitions, but only 8% in the Russian speaking area did. The qualitative data in that study showed that young Estonians can be described as "standby citizens" (Amna and Ekman, 2014), they are rather unvocal and inactive in areas conventionally categorized as political activism, do not belong to organizations, but do express interest in politics and keep informed in topics of public debate via social media. They are careful about commenting on social media and prone to self-censorship for a variety of reasons but do sometimes share both civically-minded (lost dogs, crowdfunding) and political (satire, humour and memes) content on social media (primarily Facebook and Twitter). However, they do not perceive these actions as politically engaged. This activity can be seen as cases of *ethical engagement*, *pro-social behaviour* and linked closely to the concept of reciprocity, which can guide both offline and online behaviour (Molm, 2010; Molm et al., 2007) and monetary contributions (Cnaan et al. 2011). In post-socialist countries, young people are generally even less likely to participate in formal politics than their counterparts in mature democracies (Kitanova, 2019). This is linked to overall low levels of engagement and negative connotations of the word "activist" inherited from the Soviet system (Vukelic and Stanojevic, 2012; Allaste, 2014), as well as the preoccupation with individual material wellbeing (linked to post-Soviet poverty and spread of neoliberal values). More recently, an argument has been made that the political passivity as well as the dislike for protest and the label of "activist," might be slowly lifting among the youngest people in these countries.

The ability to participate online can be better understood from a *digital divide* paradigm, which addresses the multidimensional aspects of technological inclusion based on "an access divide, a skills divide, an economic opportunity divide, and a democratic divide" (Mossberger et al., 2003). According to van Deursen and van Dijk (2010) education is a significant factor in the overall digital divide because it increases a range of skills necessary for using the Internet and more importantly for information and strategic skills. Moreover, higher education appears to be correlated with forms of voluntary engagement and monetary contribution since highly educated individuals are more willing to contribute in time-consuming voluntary engagement but not online money donations (Barraket, 2005). In a recent analysis of intentions to donate money women, younger, and less anxious people were shown to be more likely to respond positively to requests for money because they are more empathically concerned (Bekkers and Weeping, 2011). For van Deursen and van Dijk (2010, p. 908) the "original digital divide (defined as the gap between people who have and do not have physical access to computers and the Internet) has developed a second divide that includes differences in the skills to use the Internet" with now a third-level digital divide that focuses on the disparities in the returns from Internet use within groups that enjoy autonomous and unconstrained access to ICTs and the Internet infrastructure (van Deursen and Helsper, 2015). For many researchers, the digital divide can also impact on civic participation (Mano, 2014; Sylvester and McGlynn, 2010)

2.5.2 General scholarship and global context for ICT and civic participation

Young people today rank among the least civically engaged and simultaneously the most technology engaged of all age groups (Delli Carpini, 2000; Putnam, 2000; Livingstone, 2003; Lenhart et al., 2005). Thus while trends show a decrease in young people's engagement in mainstream politics, there is considerable evidence to show that young people are not indifferent about politics, but that they have their own views and engage in democracy in diverse ways as related to their everyday lives (Dalton, 2009; Marsh et al. 2007; Norris, 2003; Spannring et al., 2008). Thus, digital transformations have undoubtedly had a substantial impact on civic participation, especially concerning young people, and on how active digital citizenship is conceived, perceived and experienced. Scholarly debates around the use of ICTs by non-state actors, such as NGOs, protest groups, insurgents, militant and terrorist organizations are extensive, addressing issues such as surveillance and censorship (Zuboff, 2015; Bauman and Lyon, 2013; Fuchs, et al., 2012) and the impact of ICTs on the ideology, organization, mobilization and structures of social movements (Morozov, 2011; Coleman and Blumler, 2009; Dahlberg and Siapera, 2007; Van de Donk et al., 2004; Diani and McAdam, 2003; McCaughey and Ayers, 2003; Bennet and

Entman, 2001). Other scholarly debates address the role of digital networks in supporting social movements and protest groups around the globe (Gerbaudo, 2016; Castells, 2012; Stepanova, 2011); the influence of non-state actors on debating ethics and rights at all levels of governance - migration, the environment, the rights of cultural and other minorities - in the digital public sphere (Zuckerman, 2013; Karatzogianni and Gak, 2015); and the use of ICTs by terrorist groups and online radicalisation (Conway, 2012; O'Loughlin and Hoskins, 2008; see also European project <http://www.dare-h2020.org/>).

The disillusionment in mainstream politics by young people has “created the ideal conditions for connective action amongst an ideal target group: young, highly educated, technologically savvy citizens” (Sloam, 2014, p. 218). Sloam argues that this connective action allows for a *quickenning of political participation* through the use of new media. For instance, research has shown how protest and popular mobilizations spread geographically during the Arab Spring (Lynch, 2011; Schwedler, 2013). Some of the literature on this refers to *cascading popular democracy movements* (Howard and Hussain, 2014) and the *diffusion of rebellion* (Weyland, 2012). Research by Kim and Lim (2020) show how *cyberactive individuals* were more important than the Internet in general, online social media or even online membership in the spread of the protests. These cyberactive individuals are important as Lynch (2014, p. 97) reminds us that “Twitter does not cause revolutions, but revolutions are tweeted”, and as such, they are circulated by these cyberactive individuals. Cyberactive individuals can be linked to the work by Beilmann and Kalmus (2019) who analysed survey data collected in 2016 from 15-30-year-old Estonians as part of the Horizon 2020 project CATCH-EyoU. These researchers divided young people into four participatory types - politically-minded activists (5%), volunteers/ benefactors (30%), digital activists (28%) and passive young citizens (37%). The digital activist group actively discusses social and political topics on the Internet.

In addition to the Arab Spring there have been other protests such as those in France with the Yellow Vests that started their mobilization in November 2018, and are still ongoing (Fassin and Defossez, 2019). Yellow vest protests erupted in Australia, Belgium, Bulgaria, Canada, Croatia, Egypt, Finland, Germany, Iraq, Ireland, Italy, Latvia, Netherlands, Pakistan, Poland, Russia, Serbia, Taiwan, Tunisia, and the United Kingdom. Hong Kong's Occupy Movement, (also known as the Hong Kong umbrella movement) is a distinct act of citizen-led civic engagement influenced by global Occupy Movements. This movement captured a youth-led response to a call for Hong Kong's distinct political and social identity (Jones and Li, 2016). The protest saw physical participation by young people as well as their participation in online expressions of civic engagement (through media-making, posting, and sharing through social media). Thus the online protests were a way to produce shared knowledge, attitudes and beliefs about the event through engaging in exercises of *collective seeing* (Jones and Li, 2016). Other significant protests in Hong Kong started in June 2019, which saw protesters successfully forcing the withdrawal of the extradition bill, but that did not stop the mobilisation demanding electoral reforms and amnesty for demonstrators. According to the ecological systems theory there are different ecological systems where individuals experience well-being (or ill-being) in different systems (Bronfenbrenner, 1979). These include the “*personal system* (e.g., threat to freedom and finding life meaning through involvement in a “revolution”), *interpersonal system* (e.g., peer influence and bonding amongst peer protesters), *family system* (e.g., lack of family warmth), *social system* (e.g., sensational social media influence), and *political system* (e.g., lack of trust in the Government and support for protesters from bodies outside Hong Kong)” (Shek, 2020, p. 623, emphasis added). According to Shek (2020) the protests are based on issues around quality of life and wellbeing, which show the importance of young people's participation in these activities, requiring both cognitive and communicative functions characterised by increasingly complex creation and the use of increasingly complex tools such as social media (Maynard, Subrahmanyam and Greenfield, 2005). For young people in Hong Kong the protests centre around distrust in the Central Government, lack of national identity, political dissatisfaction, economic strains, mental health threats, drop-in family quality of life, lack of life skills education, lack of evidence-based national education in the formal curriculum, slow response of the Government, and alleged excessive use of force by the police (Shek, 2020). The proposed “Extradition Bill” prompted strong reactions in Hong Kong, including numerous demonstrations promoted through the use of social media, vandalism, and occupation of two universities in Hong Kong by young people (The Chinese University of Hong Kong and The Hong Kong Polytechnic University), which resulted in the closing of all universities in the territory. Elsewhere, large scale mobilisations by ordinary citizens' increasing intolerance of corrupt, undemocratic regimes, inequality and

unemployment saw protests erupting in Pakistan, Zimbabwe, South Africa, and Tunisia Venezuela, Chile, Haiti, and Iraq. In India, widespread demonstrations against the new citizenship law Citizenship Amendment Act protests started in December 2019, with demonstrators opposing the law as unconstitutional and discriminatory against Muslim people, the poor, and those that do not have valid proofs of citizenship. This long list of a wave of protests is striking, but we cannot forget to include the millions of young people that marched around the globe. This global protest began in September 2019 when Greta Thunberg, a 16-year old Swedish girl, walked out of school to demand that governments would take global warming seriously. Her protest inspired youth strikes around the globe, and spearheaded demands for a green revolution (Jung et al., 2020). Thunberg's rise to prominence was spurred by Twitter communications over more than 14 months and supported by celebrities and public figures, which according to Jung and colleagues (2020) created an *influencer group* that played an essential role in amplifying the influence of the activist.

This intense protest activity taking place even during the coronavirus pandemic with the global anti-racist uprising of June (2020) force scholars to refocus on the use of digital technologies, and the latter as widely as possible defined, to look at broader trends and patterns, rather than focusing on events in each country separately, or the use of specific platforms by a single movement, and to conduct research within the constant transformation of digital activism beyond its symbolic and mobilizational qualities. In our view, these patterns show key issues emerging and resurfacing with every instance of protest technologies and media revolutions across the globe: the securitization of digital networks and the crackdown on dissent by authoritarian regimes, as well as by so-called liberal democratic states; the effect of digital activists' dependence on commercial platforms and the broader importance of this dependence; how to effectively measure digital media's impact on ideology, identity, privacy, organization, mobilization, leadership emergence, and coordination of digital activist communities; the problem of ideology and consensus in the global public sphere in defining whether protest events are legitimate.

Other questions include: whether digital networks are an alternative means of inclusion in a democratic society or a means to achieve democratization (Chadwick, 2007; Sloam, 2014); under what conditions are they responsible for the amplification of an event; whether online participation indicates the intention to participate offline (Molm, 2010; Molm et al., 2007); and the quality of political engagement and the formation of collective identity in movements emerging on social media platforms (Milan, 2015), other than the indirect impact on citizen self-expression. Here the interest lies on whether these technologies can affect long term sustained political participation. Although there is intense protest activity across the globe, the various challenges remain in terms of filter bubbles or echo chamber effects (Falxman et al., 2016), disinformation (DiFranzo and Garcia, 2017), the digital divide (van Deursen and van Dijk, 2010), and state strategies (surveillance, censorship, Internet shutdowns, police violence) in terminating movements (Cosby, 2018).

Several other relevant issues around ICT social media and civic participation include research on: Digital Citizenship (e.g. access, commerce, communication, literacy, etiquette, rights and responsibilities, health and well-being, security/safety) (Mann et al., 2003; Mossberger et al., 2007; Thorson, 2012; Vivienne et al., 2016; Hintz et al., 2017). Here, for example, Frau-Meigs argues (2014: 441) that 'citizenship has also led to an increased fight against censorship, to promote transparency and access. The general well-being of society has been predicated on media freedoms and rights, especially for voting adults (around 18 years old). This can sometimes run counter to children's expected well-being because their early exposure to all sorts of content and mediated conduct can be perceived as inhibiting their own civic agency'.

Digital Media Use by Adolescents (specific problems relating to adolescence) is another area of focus. For example, Moran-Ellis et al. (2014: 417), cite a study from Nelles et al. (2007, 2011), in which they looked at the intergenerational effects of growing up in Nazi Germany as a child of resistance fighters. This work revealed that 'children's political development can be compromised by their exposure to extremely negative consequences of political actions during their childhoods'.

Finally, digital activism scholarship with a specific focus on youth participation in social movements, everyday activism, new participatory repertoires, and leadership emergence theories in social movements is another area of concern in the literature (Loader et al., 2014; Sloam, 2014;

Kotilainen and Rantala, 2009).

2.6 Conclusions

The pages above provide a review of the literature on four main research areas regarding technology and children: family life, leisure time, education and civic participation. There is plenty of literature available on specific aspects of digital technology and its effect on family life. In contrast, some topics have not yet been sufficiently explored or seem somewhat outdated and can thus only be supported by older studies. The existing evidence suggests that the ways families engage with digital technologies are complex, and so are its consequences. On the one hand, digital technologies offer unique opportunities. ICT support the reproduction of family (doing family), assist the creation and maintenance of new and existing relationships, help children in the development of their identity and skills.

On the other hand, children – and also adults – face online risks and challenges, e.g. if they are exposed to harmful content or if their privacy is abused. Adequate parental mediation and essential digital competencies can help to mitigate the adverse effects of children's and young people's online activities. Hence, whether the overall impact on family life is positive or negative highly depends on the combination of digital behaviours families implement in their daily lives. Further research is needed to close the identified research gaps. Additional efforts should be made to shed more light on the complexity of the effect of digital technologies on family life (e.g. by focussing on the health consequences of specific activities rather than the impact of total viewing time).

Leisure has been a prominent issue in social research. The sociology of leisure had already gained some importance in the mid-1970s when Stanley Parker (1975) was providing an account on the progress of the field, while at the same time the scientific journal *Leisure* was launched. The digital revolution has substantially moved the issues pertaining to leisure to digital spaces. Social media, gaming and in general digital communication are central in all accounts on leisure time, particularly in the case of children and adolescents. The literature in the field is growing, and several aspects have been identified in the pages above. The main areas of interest are linked to existing societal concerns, such as parental attitudes and responsiveness to various risks identified within the use of ICT by children and adolescents; the (potentially negative) impact of ICT use on the social and psychological well-being of children and adolescents; the risk areas that demand specific attention within family and institutional settings. Furthermore, hypotheses and questions have been raised opening future avenues of research about digital practices deployed by children and adolescents themselves in the digital space. The growing fusion of physical and digital space since the latter has become an integral part of the everyday life of children and adolescents asks for further research on digital practices. This will contribute to a better understanding of socialisation patterns within digital spaces that will help us conceptualise digital practices and identities beyond initial, necessary yet preliminary, assumptions on digital divide(s) and risk areas.

Regarding the use of ICT in schools and for educational purposes, the pages above summarise how previous literature has dealt with several issues: how schools are equipped, how ICT is actually used in everyday school life, the level and determinants of students' Computer and Information Literacy (CIL) including the importance of the socio-economic background, as well as, teachers' experiences with ICT. Further research is necessary, for example, to determine the causal link between students' socio-economic background or teachers' digital preparedness and students' level of digital competence. Moreover, the existing studies are inconclusive in several areas as, for example, the influence of gender on students' level of computer skills.

The research literature shows that the political behaviour of young people is manifested online and that this can affect offline political practices as well. While some young people might not recognise their online activities as political, they can be described as cases of *ethical engagement* or *pro-social behaviour* and linked closely to the concept of *reciprocity*, which can guide both offline and online behaviour (Molm, 2010; Molm et al., 2007) and monetary contributions (Cnaan et al. 2011). Thus, such behaviour can be seen as an advantage of the media culture as it enhances young people's civic participation and increases their awareness of social issues.

While young people today can be described as less civically engaged and simultaneously the most technology engaged of all age groups (Delli Carpini, 2000; Putnam, 2000; Livingstone, 2003; Lenhart et al., 2005), trends show a decrease in young people's engagement in mainstream politics. Moreover, there is considerable evidence to show that young people are not indifferent about politics (Dalton, 2009; Marsh et al. 2007; Norris, 2003; Spannring et al., 2008), but they might have different ways of engagement as opposed to mainstream politics. Digital transformations have also affected young people's civic participation, especially concerning how *active digital citizenship* is conceived, perceived and experienced. The literature has shown an impact of ICTs on the ideology, organization, mobilization and structures of social movements by young people and underpins their way of *doing politics* (Morozov, 2011; Coleman and Blumler, 2009; Dahlberg and Siapera, 2007; Van de Donk et al., 2004; Diani and McAdam, 2003; McCaughey and Ayers, 2003; Bennet and Entman, 2001). For young people today, social media serves as an avenue for civic participation. It affects their norms, values, attitudes, and behaviours regarding democracy, power, politics, policymaking, social and political participation, both online and offline, and the organisation of economic, social and private life (Keating and Melis, 2017). However, the research literature is lacking in identifying ways to strengthen young people's political participation and engagement with democratic life in Europe. Perhaps this can be better understood by looking at the role of social media on civic participation and active citizenship. Thus, by focusing on political discourses and practices in digital networks used by young people, we might better understand their motivations and their civic participation.

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3. Databases review

3.1 Introduction

The main purpose of the following pages is to provide an overview of existing data on information and communication technologies (ICT) that allows not only the computation of related child indicators but also the analysis of at-risk groups. The information is provided in two main sections. The first one includes the most important international databases that allow cross-country comparative analysis. After that, we give account of the databases existing at the national level in the countries participating in this project. Most of the data we review are accessible to researchers and policymakers and, in combination, they can be used to provide a comprehensive and accurate picture of the many faces of the digital divide across Europe.

In order to provide so much information in a single document, we present each database in a table. The first panel contains general information about the dataset such as the participation countries, the time period covered, the type of data and population target – for example, whether it is a survey or it comes from administrative records –, the webpage where to gather additional information, the source and the accessibility to researchers, among other aspects. In a second panel, a brief general description of the database is presented as well as its broad objectives. The third panel provides an account of the most relevant information on ICT that the database includes – mainly, groups of variables on a concrete topic. For most databases, a very detailed list of the ICT indicators can be found in the corresponding table in the Appendix. The fourth panel details whether certain at-risk groups can be identified in that given database. We have considered children from immigrant origin, children living below the poverty line, children in large families, children with low educated parents, children with disabilities, and the divide between urban and rural. If a different at-risk group can be identified that those just listed, it will be detailed under the category ‘other’. The last two panels contain our subjective evaluation regarding the strengths and weaknesses of each database. When possible, we also comment on the potential improvement of the database for future analyses.

In total, we provide information for eleven international databases and forty-five national databases.

Finally, the last section of this document contains some concluding remarks that intend to summarize the information provided as well as the main strengths and weaknesses of current data for empirical research. Most importantly, we also identify the information lacking in current surveys and provide concrete recommendations for the improvement of the existing data that could enrich future analyses.

3.2 International databases

3.2.1 2nd Survey of Schools: ICT in Education

Database: 2nd Survey of Schools: ICT in Education

Acronym: -

Coverage: Europe (31 countries: AT, BE, BG, CZ, CY, DE, DK, EE, ES, FI, FR, GR, HR, HU, IR, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, GB)

Time period: 2017 - 2018 (as of June 2020)

Type of data and population target: Survey (child, teachers and parents). Two-stage stratified cluster sample design by PPS

Web page: <https://data.europa.eu/euodp/de/data/dataset/2nd-survey-of-schools-ict-in-education>

Source: EU Open Data Portal

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

The '2nd survey of Schools: ICT in Education' is a study pending on the Digital Education Action Plan, which one of its highest interest is to have more data and evidence regarding the digitalisation in Schools. Being concrete, this survey has two main objectives. The first one is to provide accurate information related to access, use and attitudes towards technology. The second one is to present and define three types of classrooms according to their level of connectivity.

Most relevant ICT information

The survey contains information on access to and use of digital technologies, digital activities and confidence of teachers and students in their digital competence. It also enquires about ICT related professional development of teachers, digital home environment of students, schools' digital policies, strategies and opinions. See the list of indicators on ICT in Table A.1. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes
 Poor children: No
 Large families (3+ children): Yes
 Low educated parents: Yes
 Children with disabilities: No
 Urban / rural: No
 Other (please specify):

Strengths

- It contains a large number of ICT- related variables
- It contains information related to teachers, parents and children, as well as schools' digital policies, strategies and opinions

Weaknesses

- It contains few socio-demographic and economic characteristics at the individual and at the household level so multiple at-risk groups cannot be identified.

Potential improvement

We currently have no information on the periodicity of the survey. In this way it could be improved by conducting the survey annually in order to compare and understand changes in the indicators.

3.2.2 Community Statistics on Information Society (CSIS)

Database: Community Statistics on Information Society (CSIS)

Acronym: CSIS

Coverage: **AT**, BE, CY, CZ, DE, DK, **EE**, **ES**, FI, FR, GB, GR, HR, HU, IR, IT, LT, LU, LV, NL, PL, PT, **RO**, SE, SI, SK

Time period: 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015 - 2016 - 2017 (as of June 2020)

Type of data and population target: Survey data. Households with at least one member in the age between 16 a 74 and individuals with an age between 16 and 74.

Web page: <https://ec.europa.eu/eurostat/web/microdata/community-statistics-on-information-society>

Source: Eurostat

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

The Community Statistics on Information Society (CSIS) survey collects statistics concerning the access and use of information and communication technologies, from both households and individuals. It is conducted annually in all European Union member States, in two European Free Trade Association countries, and all candidate and accession countries to the European Union. The annual core subjects are: access to ICT, use of computers, use of the Internet, eGovernment, eCommerce and eSkills, but it also includes some topics depending on the year (e.g. use of smart TV by activity).

Most relevant ICT information

It contains a wide range of indicators related to the access to ICT (e.g. type of Internet connection, access to computer, tablet, or laptop, etc.), as well as, individual indicators on the use of ICT (mainly use of Internet, eGovernment, eCommerce, Internet and computer skills, and privacy and protection of personal identity). See the list of indicators on ICT in Table A.2. of the Appendix.

Identification of at-risk groups

Immigrant children: No
 Poor children: Yes
 Large families (3+ children): Yes
 Low educated parents: No
 Children with disabilities: No
 Urban / rural: Yes [Degree of urbanization]
 Other (please specify):

Strengths

- The survey contains multiple ICT indicators for a wide array of topics.

Weaknesses

- Last wave of data refers to 2017

3.2.3 Health Behaviour in School-aged Children, HBSC

Database: Health Behaviour in School-aged Children, HBSC

Acronym: HBSC

Coverage: AL, AM, **AT, BE**, BG, CA, CH, CZ, **DE**, DK, **EE**, GB-ENG, **ES**, FI, FR, GL, **GR**, HR, HU, IE, IL, IS, IT, LU, LV, MD, MK, MT, NL, **NO**, PL, PT, **RO**, RU, GB-SCT, SE, SI, SK, UA, GB-WLS

Time period: 2002 – 2006 – 2010 – 2014 – 2018 (as of June 2020)

Type of data and population target: Survey data. 11, 13 and 15 year old children. Clustered (stratified) sampling design

Web page: <https://www.uib.no/en/hbscdata/113290/open-access>

Source: HBSC and WHO Collaborative Stud

Accessibility for researchers: Data not freely available. The centre distributes data in accordance with the HBSC data access policy

Name of the database in its original language: -

Other relevant information: -

Description

HBSC focuses on understanding young people's health in their social context - where they live, at school, with family and friends. The database aims to inform about behaviours established during adolescence that can continue into adulthood, affecting mental health, the development of health complaints, tobacco use, diet, physical activity levels, and alcohol use. The international standard questionnaire produced for every survey cycle enables the collection of common data across all participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables.

Most relevant ICT information

Bullying and fighting (among others: Cyberbullied by messages, pictures), physical activity and sedentary behaviour (among others, hours a day watching tv, computer games, time on electronic devices), communication with friends (Internet, phone, texting, instant messaging, other social media). See list of indicators on ICT in Table A.3. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes
 Poor children: Yes
 Large families (3+ children): Yes
 Low educated parents: No
 Children with disabilities: No
 Urban / rural: Yes
 Other (please specify): As the database is quite comprehensive, several other associations can be analysed, especially related to health and well-being

Strengths

- It is a survey conducted regularly with the same methodology in different countries
- It contains quite comprehensive individual-level data on socio-demographic characteristics, health, well-being and ICT related indicators
- The data quality is high

Weaknesses

- Researchers not belonging to the HBSC national teams need to wait for a three years embargo in order to be provided access to the data. Thus, by the time, such researchers have access to the data, the reality on ICT may have changed a lot.
- The data are not freely available, although researchers can access it upon request
- Participating countries may have slightly different data available (there are core modules and optional modules)

Potential improvement

The HBSC study could include more indicators that enable to assess associations between health/well-being and the digital divide.

3.2.4 European Union - EU Kids online II**Database: EU Kids online II**

Acronym: EKO

Coverage: Europe (25 countries: **AT, BE, BG, CZ, CY, DE, DK, EE, ES, FI, FR, GR, HU, IR, IT, LT, NL, NO, PL, PT, RO, SE, SI, TR, GB**)

Time period: 2009-2011 -2020 (as of June 2020)

Type of data and population target: Survey (child and parents). Three-stage (sampling points – 125 PSU chosen by PPS, addresses, and individuals), random probability clustered stratified sample

Web page: <https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=6885>

Source: Livingstone, S., London School of Economics and Political Science, Department of Media and Communications

Accessibility for researchers: The data is available to users registered with the UK Data Service.

Name of the database in its original language: -

Other relevant information: -

Description

The European Union Kids online II aims to gather knowledge regarding parents' and children's online experiences in Europe. In concrete, it configures a robust survey instrument to identify the nature of children's Internet access, use, and risk, as well as to detect the nature of parental experiences, practices, and concerns regarding their children's Internet use.

Most relevant ICT information

Parents: problems and worries (ICT related), parent's Internet use, child's Internet use, parental mediation, child bothering and child's Internet behaviour

Child: child's ICT use, Internet activities, social networks, ICT skills, bothering, online communication, parental mediation, mediation, individual characteristics, risky behaviour offline, offline support, negative experiences, harming others: bullying (perpetrator), risky experiences: sexual content, harming others: sending sexual messages, risky experiences content, abuse of personal privacy, Internet addiction, social web and meeting strangers. See list of indicators on ICT in Table A.4. of the Appendix.

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: No

Urban / rural: No

Other (please specify): -

Strengths

- It contains a large number of ICT- related variables

Weaknesses

- It contains few socio-demographic and economic characteristics at the individual and at the household level so multiple at-risk groups cannot be identified.
- The number of participating countries in each wave differs rendering cross-country comparative analysis over time more complicated.

3.2.5 Program for International Student Assessment**Database: Program for international student assessment**

Acronym: PISA

Coverage: 79 countries including all the consortium countries: NO, DE, BE, GB, AT, ES, EE, GR, RO

Time period: 2000, 2003, 2006, 2009, 2012, 2015, 2018 (as of June 2020)

Type of data and population target: Survey (children, teachers, and parents). Two-stage-stratified sample with PPS

Web page: <https://www.oecd.org/pisa/data/2018database/>

Source: OECD

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

PISA is the OECD's Programme for International Student Assessment. It evaluates educational systems worldwide by testing the skills and knowledge of 15-year-old students and assesses how well they can apply what they learn in school to real-life situations in mathematics, reading and science related test questions and be equipped for society.

Most relevant ICT information

Family questionnaire (answered by students): student's ICT access at home, use at home, access at school, news, social media, online banking

Student questionnaire: ICT access, digital skills, digital reading

Parents questionnaire: reading and ICT parent, reading in digital devices

Teachers questionnaire: ICT skills, ICT use in lessons, reading books in digital devices

School questionnaire: ICT access

See list of indicators on ICT in Table A.5. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: No

Urban / rural: Yes

Other (please specify):

Strengths

- It contains a large number of ICT- related variables
- It contains information related to teachers, parents and children

Weaknesses

- It contains few socio-demographic and economic characteristics at the individual and at the household level so multiple at-risk groups cannot be identified.

3.2.6 Trends in International Mathematics and Science Study

Database: Trends in International Mathematics and Science Study

Acronym: TIMSS

Coverage: 2015: AR, AM, AU, BH, **BE**, BW, BG, CA (with Ontario and Quebec as benchmarking systems), CL, CN (Taipei), HR, CY, CZ, DK, EG, **GB**, SF, FR, GE, **DE**, HK, HU, ID, IR, IE, IL, IT, JP, JO, KZ, KR, KW, LB, LT, MY, MT, MA, NL, NZ, **NO**, OM, PS, PL, PT, QA, RU, SA, RS, SG, SK, SI, ZA, **ES**, SE, TH, TR, AE (with Abu Dhabi and Dubai as benchmarking systems), US (with Florida as a benchmarking system)

Time period: 1995, 1999, 2003, 2007, 2011, 2015 (as of June 2020)

Population: grade 4 and grade 8 students -> Please note that not all participating countries have surveyed both students

Type of data and population target: Survey data. student questionnaire; parent questionnaire, teacher questionnaire; school questionnaire (filled in by principals); additional national context questionnaire // two-stage cluster samples

Web page: <https://www.iea.nl/studies/iea/timss/2015/results> & <https://timss.bc.edu/timss2015/>

Source: IEA (International Association for the Evaluation of Educational Achievement)

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

TIMSS includes student mathematics and science achievement data.

Most relevant ICT information

Use of computer and tablet, time spend using ICT devices, access to Internet and ICT, digital skills (how were acquired), ICT use in school, online content for studying (maths). See list of indicators on ICT in Table A.6. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: Disabilities are recorded in detail (e.g. social emotional disorders)

Urban / rural: Yes

Other (please specify):

Strengths

- International comparison
- Trend comparison over the survey years
- Comparison between boys and girls in mathematics and science
- Examination of the relation between social and migration background and mathematical and science skills

Weaknesses

- It contains few socio-demographic and economic characteristics at the individual and at the household level so multiple at-risk groups cannot be identified.
- No proper longitudinal study
- Only quantitative approach
- Some of the risk groups (e.g. children with disabilities) might be too small to make any statements

3.2.7 Progress in international reading literacy study

Database: Progress in international reading literacy study

Acronym: PIRLS

Coverage: 2016: AR, AU, **AT**, AZ, BH, **BE**, BG, CA (with Ontario and Quebec as benchmarking systems), CL, CN (Taipei), CZ, DK, GB, FI, FR, GE, **DE**, HK, HU, IE, IR, IL, IT, KZ, KW, LV, LT, MO, MT, MA, NL, NZ, **NO**, OM, PL, PT, QA, RU (with Moscow City as benchmarking system), SA, SG, SK, ZA, **ES** (with Andalusia and Madrid as benchmarking systems), SE, TT, AE (with Abu Dhabi and Dubai as benchmarking systems), and US

Time period: 2001, 2006, 2011, 2016 (as of June 2020)

Population: grade 4 students

Type of data and population target: Survey data. student questionnaire; parent questionnaire, teacher questionnaire; school questionnaire (filled in by principals); additional national context questionnaire // two-stage cluster samples

Web page: <https://www.iea.nl/studies/iea/pirls/2016> & <https://timssandpirls.bc.edu/pirls2016/index.html>

Source: IEA (International Association for the Evaluation of Educational Achievement)

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

PIRLS is an international comparative assessment that measures student learning in reading.

Most relevant ICT information

ICT use for schoolwork, ICT access, ICT use, ICT skills and school's ICT access. See list of indicators on ICT in Table A.6. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: Disabilities are recorded in detail (e.g. social emotional disorders)

Urban / rural: Yes

Other (please specify):

Strengths

- International comparison between countries
- Comparison between boys and girls in reading literacy
- Trend comparison over the survey years
- Examination of the relation between social background and reading literacy
- Wide range of ICT indicators in school

Weaknesses

- It contains few socio-demographic and economic characteristics at the individual and at the household level, so it is difficult to identify at-risk groups
- No proper longitudinal study
- Only quantitative approach
- Some of the risk groups (e.g. children with disabilities) might be too small to analyse

3.2.8 ICILS

Database: ICILS

Acronym: ICILS

Coverage: 2013: AU, CL, HR, CZ, DK, **DE**, HK, KR, LT, NL, **NO** (Grade 9), PL, RU, SK, SI, Switzerland, TH, TR; Benchmark-participants: the City of Buenos Aires (AR), Newfoundland and Labrador (CA), Ontario (CA)

2018: CL, DK, FI, FR, **DE**, IT, KZ, KR, LU, PT, US, UY; Benchmark-participants: Moscow (RU; North Rhine-Westphalia (**DE**))

Time period: 2013 and 2018 (as of June 2020)

Population: The ICILS student population was defined as students in grade 8 (typically around 14 years of age in most countries)

Type of data and population target: Survey data. student questionnaire; teacher questionnaire; school questionnaire (consists of two parts: pedagogical part to be filled in by the principals and a technical part that could also be filled in by the IT coordinators of the school); additional national context questionnaire // two-stage cluster samples

Web page: <https://www.iea.nl/data-tools/repository/icils>

Source: IEA (International Association for the Evaluation of Educational Achievement)

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

ICILS 2013 examined the computer and information literacy (CIL) outcomes of students across countries. See list of indicators on ICT in Table A.7. of the Appendix.

Most relevant ICT information

ICT access, ICT use, ICT use in school, ICT skills, ICT for education and studies, ICT use of teachers, ICT used in class by teachers, information about the school, knowledge of ICT (teachers), approaches to teaching, management of ICT, ICT support and ICT resources. See list of indicators on ICT in Table A.8. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes (The migration background of the students is recorded)

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes (Low educated parents are recorded with the educational level of the parents of the students (ISCED))

Children with disabilities: No

Urban / rural: Yes (This aspect is covered by the population of the respective schools)

Other (please specify):

Strengths

- Many countries take part in the survey, so it allows to make international comparisons
- Consideration of competence levels in terms of computer and information literacy
- Comparison between boys and girls in computer and information literacy
- Examination of the relation between immigration background and computer and information literacy
- Examination of the relation between socio-economic status (HISEI) and computer and information literacy

Weaknesses

- No proper longitudinal study
- Only quantitative approach
- Some of the risk groups (e.g. children with disabilities) might be too small

3.2.9 Statistics on Income and Living Conditions

Database: European Union - Statistics on Income and Living Conditions

Acronym: EU-SILC

Coverage: Europe (32 countries): **BE**, CZ, DK, **DE**, EE, IR, GR, **ES**, FR, HR, IT, LV, LT, HU, MT, NL, **AT**, PL, PT, RO, SI, SK, FI, SE, **GB**, IS, **NO**, CH, MK, RS, TR, ME

Time period: 2004-2018 (as June 2020)

Type of data and population target: Survey (households and individuals)

Web page: <https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions>

Source: Eurostat, together with the National Statistics Institutes (NSIs)

Accessibility for researchers: By agreement with Eurostat

Name of the database in its original language: -

Other relevant information: -

Description

The EU-SILC collects comparable cross-sectional and longitudinal microdata mostly on income and living conditions and it includes an important number of variables on household and individual characteristics (labour market, family structure, material deprivation, financial difficulties, possession of a computer, etc.).

Most relevant ICT information

There are only two indicators closely related to Information and Communication Technologies: i) whether the household has a computer or not (and in that case whether it is because they cannot afford it or because of other reasons) and, ii) whether the adult members in the household have Internet connection for their private use or not (and in that case whether it is because they cannot afford it or because of other reasons). A third indicator asks whether the household has a colour TV. See list of indicators on ICT in Table A.8. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: No

Urban / rural: Not really (two large numbers of missing values)

Other (please specify): Children living in material deprivation

Strengths

- It contains a large number of socio-demographic and economic characteristics at the individual and at the household level so multiple at-risk groups can be identified.
- It has the great advantage to be collected throughout Europe thus reliable cross-country comparative analysis are possible.
- It is an on-going database, so information is available since 2004.
- It permits the analysis of digital enforced lack, that is, digitally deprived children living in families that state they cannot afford a computer or Internet connection in the household.
- It has a longitudinal component which allows tracking individuals and households over a four years period which eventually can allow the analysis of the dynamics of access to ICT technologies.

Weaknesses

- There are only two indicators related to Information and Communication Technologies: i) whether the household has a computer or not (and in that case whether it is because they cannot afford it or because of other reasons) and, ii) whether the adult members in the household have Internet connection for their private use or not (and in that case whether it is because they cannot afford it or because of other reasons).
- Given that the dataset is so large and so many countries participate, the dataset can be analysed with a considerable delay (for example, in the first quarter of 2020 we are able to analyse data up to 2018).

Potential improvement

The EU-SILC would be easily improved for the analysis of digital at-risk groups by adding few more indicators on, for example, the use of new technologies, the affordability of other devices (e.g. a tablet) or parents' digital knowledge. Data should be provided to researchers for analysis with a shorter delay.

3.2.10 International Survey of Children's Well - Being

Database: International Survey of Children's Well - Being

Acronym: ISCWeB

Coverage: AL, DZ, BD, **BE**, BR, CL, CN, EE, FI, FR, **DE**, **GR**, HK, HU, IN, ID, IL, IR, IT, CI, MY, MT, NA, NP, **NO**, PL, PT, **RO**, RU, **ES**, LK, CH, ZA, KR, TW, TR, GB, US, VN, GB-WL

Time period: 2012 - 2013 - 2014 (as of June 2020)

Type of data and population target: Survey data. Children of three age groups - 8 years old, 10 years old and 12 years old (2nd wave)

Web page: <http://www.isciweb.org/>

Source: Jacobs foundation

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

Children's Worlds, the International Survey of Children's Well-Being (ISCWeB), is a worldwide survey on children's subjective well-being. The main objective of the study is to gather data on children's lives and daily activities, as well as the perception of their well-being.

Most relevant ICT information

Computer access, access to Internet, access to mobile phone, time spent using a computer, time watching TV or listening to music. See list of indicators on ICT in Table A.9. of the Appendix.

Identification of at-risk groups

Immigrant children: children answer if they are born in the country (where they are living) or not. And if they say no, they can write the name of their country of birth.

Poor children: Poor children cannot be identified directly but there is a material deprivation proxy ("how often do you worry about how much money your family has?": never, sometimes, often, always, don't know). Also, the economic situation of the family can be proxied with information on the adults' labour market status ("how many adults that you live with have a paid job?": none, one, two, more than 2, don't know).

Large families (3+ children): No (they mention if they have brothers and sisters, but not how many)

Low educated parents: No

Children with disabilities: No (the survey is administrated in schools, but not schools for special needs children)

Urban / rural: in some countries, the survey asks children the town where they live. Then, some researchers can determine if that was an urban, semi-urban or rural area (taking into account the context characteristics).

Other (please specify): Children in care or out-of-home (differentiating between foster home and children's home)

Strengths

- There is information from the children's point of view.
- There is information about children's subjective well-being

Weaknesses

- Usually the identification of at-risk groups or ICT information is built by adults and measured in an adults-centred point of view. This makes some questions difficult to be asked to children in the same way (for example: household income). However, there are some questions that might be answering a similar characteristic or concept but in a different way (for example: asking children if they are happy with the things they have).

Potential improvement

Regarding ICT information, several questions could be added.

3.2.11 Harmonised European Time Use Surveys (HETUS)

Database: Harmonised European Time Use Surveys

Acronym: HETUS

Coverage: AT, BE, DE, EE, EL, ES, FI, FR, HU, IT, LU, NL, PL, RO, UK, NO, RS.

Time period: 2000 – 2010 (next round is scheduled for 2020) (as of June 2020)

Type of data and population target: Survey data. Household, individuals and child between 10 and 14 years old

Web page: <https://ec.europa.eu/eurostat/web/microdata/time-use-survey>

Source: Eurostat

Accessibility for researchers: Free access

Name of the database in its original language: -

Other relevant information: -

Description

The Harmonised European Time Use Surveys are national surveys in the different European Union member states that aim to quantify how much time people spend doing various activities such as working, household chores, family care, voluntary work, social work and leisure, among others. It is held once a decade.

Most relevant ICT information

There is a wide range of ICT indicators as the answers of the time use are quite permissive. The main indicators are time spent in communication by text messaging (SMS, instant messages, email, etc.), time spent on social media, computing searching information using Internet, playing solo games, playing computer, console and mobile games and watching TV. It also includes if the computer was used during another main activity (e.g. working). See list of indicators on ICT in table A.10. of the Appendix.

Identification of at-risk groups

Immigrant children: No

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: No

Urban / rural: No

Other (please specify):

Strengths

- There is a wide range of ICT indicators and how time is spent on them.
- It informs whether ICT are used in combination with another main activity

Weaknesses

- Few demographic indicators on child.

3.3 National databases

3.3.1 Austria

3.3.1.1 Educational Standard Assessment

Database: Educational Standard Assessment

Acronym: BIST-Ü

Coverage: Austria

Time period: 2009-2019 (as of June 2020)

Type of data and population target: Survey (students, parents, teachers, school principals); grade four or grade eight students

Web page: <https://www.bifie.at/bildungsforschung/forschungsdatenbibliothek/>

Source: Bundesinstitut für Bildungsforschung (bifie)

Accessibility for researchers: by agreement with bifie

Name of the database in its original language: Bildungsstandardüberprüfung

Other relevant information: -

Description

The structure of the dataset is similar to the international studies of PISA, TIMSS and PRILS. Primarily, BIST-Ü assesses the subject competencies acquired by grade four/grade eight students but also provides a big variety of additional background information. The target population is alternating on a yearly basis between grade four and grade eight students. In each wave one subject, namely either Mathematics, German or English (grade eight only), is examined:

- 2019: subject English; students grade eight
- 2018: subject Mathematics; students: grade four
- 2017: subject Mathematics; students grade eight
- 2016: subject German; students grade eight
- 2015: subject German; students grade four
- 2013: subject English; students grade eight
- 2013: subject Mathematics; students grade four
- 2012: subject Mathematics; students grade eight
- 2010: baseline assessment; students grade four
- 2009: baseline assessment; students grade eight

In the survey, the students, their teacher of the assessed subject, one parent and the school principal are sampled. Next to the test assessment, the students answer questions regarding their learning environment at home, their experiences at school, the teaching practices of the subject studied and their well-being at school and in class. Parents of grade four students (not asked in grade eight sample) answer questions including the learning environment in the family and their child's educational path. Since 2018 teachers provide information on the class attained by the student assessed and their teaching practices. The school principal gives general information about the school, the assessed classes, the teaching staff and the (teaching) conditions and the school facilities.

Most relevant ICT information

Students:

- Tablet and e-book reader access at home (2017 only)
- ICT use for school
- ICT use at school

Teachers:

- The use of ICT during lessons, at home and for lesson preparation.
- Opinion on eLearning methods
- ICT practices at school

School principals:

- The school's ICT facilities
- Opinion on eLearning methods
- Whether there is a lack of ICT equipment/Internet access at school
- Future ICT equipment plans for the school

See list of indicators on ICT in table A.11. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes
 Poor children: Yes
 Large families (3+ children): No
 Low educated parents: Yes
 Children with disabilities: No
 Urban / rural: not really (km to the school as a proxy?)
 Other (please specify):
 Schools with lack of ICT equipment/Internet access: Yes

Strengths

- The dataset covers information from different groups of individuals (student, parent, teacher, school principal) which gives a broad picture of the target population. This also means that some at-risk groups can be identified.
- The questionnaires are partly comparable or even identical to the questions asked in PISA, TIMSS and PIRLS, which allows for international comparison (at least to some extent).

Weaknesses

- The focus of this dataset is not on ICT, only some ICT related indicators are collected. Some of the mentioned ICT indicators were only included in one or two – mostly in the latest – waves of the study.
- The questions on ICT have partly changed across waves. Therefore, not all ICT indicators can be compared across waves.

Potential improvement

Similar to ICT indicators provided in PISA or ePIRLS additional indicators could be added to BIST-Ü. For example, in PISA 2018 it was not only asked whether the student has access to a tablet/e-book reader at home, also information about the student's access to various other devices is available. Other ICT topics from PISA/ePIRLS that could be helpful for BIST-Ü especially concern the digital competencies of students and teachers.

3.3.1.2 Media Analyses**Database: Media Analyses**

Acronym: MA
 Coverage: Austria
 Time period: 1965-2019 (only the waves 2014-2019 are comparable) (as of June 2020)
 Type of data and population target: Survey (individuals); 14-year-olds and older
 Web page: <https://www.media-analyse.at/p/2>
 Source: Verein Arbeitsgemeinschaft Media - Analysen (VMA)
 Accessibility for researchers: for VMA association members only
 Name of the database in its original language: Media Analyse
 Other relevant information: -

Description

MA is the largest survey about print media in Austria. Even though the focus is not on digital technologies, the dataset also provides very rich information about ICT and a lot of background information about the living conditions and attitudes of Austrians. More specifically, information on the following topics is collected: thematic interests, leisure activities, information interests, attitudes and values, personal possessions and acquisition plans, household possessions (including ICT), Internet use, mobile phone use, housing, business travel, professional decision-making, demography.

Most relevant ICT information

- Type of Internet access
- Individual ownership of digital devices, household ownership of digital devices
- ICT activities, frequency of Internet use, frequency of digital device use, places of ICT use, reasons for ICT use
- Which household member decides about buying ICTs
- Level of ICT interest

Identification of at-risk groups

Immigrant children: No
 Poor children: Yes
 Large families (3+ children): Yes
 Low educated parents: Yes
 Children with disabilities: No
 Urban / rural: Yes
 Other (please specify):
 Children living in material deprivation: Yes
 Single-parent family: Yes
 Young families (with a child < 6 years old): Yes
 Risk-groups can be defined based on lifestyle: Yes

Strengths

- The combination of a large variety of information on living conditions and ICT, as provided by this database, is scarce in many other databases. It makes the identification of many possible new at-risk-groups possible. For example, applying this data, it could be tested whether individuals with certain lifestyles are more likely to experience a digital divide. In addition, different types of family structures can be identified to analyse their likelihood of being at risk of digital exclusion.
- Comparable data from this dataset has been collected since 2014. Therefore, also time trends can be identified.
- Quite a lot of people have been sampled. For example, the total dataset of 2019 includes more than 15,000 individuals. This means that there are also enough observations available from the youngest group of individuals that DigiGen is interested in.

Weaknesses

- The main weakness is that the dataset is available for the VMA association members only.

Potential improvement

Providing researchers full access to the micro-dataset would be very useful.

3.3.1.3 The Youngest (0-6) & digital media**Database: The Youngest (0-6) & digital Media**

Acronym: -
 Coverage: Austria
 Time period: (as of June 2020): 2012 (3-6-year olds) and 2019 (as of June 2020)
 Type of data and population target: Survey (individuals), parents of 0-6-year-old children
 Web page: <https://www.saferinternet.at/news-detail/studie-72-prozent-der-0-bis-6-jaehrigen-im-internet/>
 Source: Institut für empirische Sozialforschung (IFES), Österreichischen Instituts für angewandte Telekommunikation (ÖIAT), Internet Service Providers Austria (ISPA), Saferinternet.at
 Accessibility for researchers: no (?)
 Name of the database in its original language: Die Allerjüngsten (0-6) & digitale Medien
 Other relevant information: -

Description

The aim of this study is to collect data on the ICT behaviours of young children in Austria (from a parent's point of view).

Most relevant ICT information

- This study provides information on the devices in the household with children under the age of six use to access the Internet.
- The study collects data on children's ICT practices from a parent's point of view (e.g. which and how often the child uses digital devices, what type of digital activities the child does, the ownership of the devices child uses, whether the child already came across harmful content online).
- Parents are asked about their individual ICT behaviours (e.g. how much time they spend online) and their ICT practices related to the child (e.g. how they mediate children's ICT consumption, information on the child they share online, whether ICT is used as a 'babysitter')

Identification of at-risk groups

Immigrant children: No
 Poor children: No
 Large families (3+ children): No
 Low educated parents: No
 Children with disabilities: No
 Urban / rural: No
 Other (please specify):
 This information is not available, either because data on at-risk groups was not collected or is not available for third parties.

Strengths

- The target population is young children which is often lacking in the research literature

Weaknesses

- The full study and the dataset are not available for third parties

Potential improvement

There is not enough information available to say something about potential improvement. Full access to researchers would be required.

3.3.1.4 Youth Internet Monitor**Database: Youth Internet Monitor**

Acronym: -
 Coverage: Austria
 Time period: 2016 – 2020 (as of June 2020)
 Type of data and population target: Survey (individuals); 11-17 year-olds
 Web page: <https://www.saferinternet.at/services/jugend-internet-monitor/>
 Source: Institut für Jugendkulturforschung, Saverinternet.at
 Accessibility for researchers: no
 Name of the database in its original language: Jugend-Internet-Monitor
 Other relevant information: -

Description

This study collects information on the social network use of young people in Austria on a yearly basis.

Most relevant ICT information

The most relevant ICT information of this study includes the type of Internet platforms young people use. In addition, the 2020 survey also asked which music and streaming platforms are used by young people.

Identification of at-risk groups

Immigrant children: No
 Poor children: No
 Large families (3+ children): No
 Low educated parents: No
 Children with disabilities: No
 Urban / rural: No
 Other (please specify):
 This information is not available, either because data on at-risk groups was not collected or is not available for third parties.

Strengths

- The study is conducted on a yearly basis.

Weaknesses

- The full study and the dataset are not available for third parties.

Potential improvement

There is not enough information available to say something about potential improvement. Full access to researchers would be required.

3.3.1.5 Youth and digital media

Database: Youth and digital Media

Acronym: -

Coverage: Austria

Time period: 2018 (as of June 2020)

Type of data and population target: Survey; well-educated 16-24-year-old young people

Web page: <https://jugendkultur.at/studie-jugend-digitale-medien/>

Source: Institut für Jugendkulturforschung

Accessibility for researchers: access to the full study is given against payment, access to the dataset is not available

Name of the database in its original language: Jugend und digitale Medien

Other relevant information: -

Description

In this study well-educated young people were asked about their digital communication mix.

Most relevant ICT information

- Frequency of use of digital platforms
- Smartphone ownership
- Popular apps, topics of interest on YouTube and Instagram
- Acceptance of commercial advertising on social media
- Perceived presence and credibility of influencers on YouTube and Instagram and their attitude towards influencer

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify):

This information is not available, either because data on at-risk groups was not collected or is not available for third parties.

Strengths

- There is not enough information available to say something about strengths of this database.

Weaknesses

- The full study is only available against payment and the dataset is not available for third parties
- The target population only contains well-educated people, nothing can be said about less educated groups

Potential improvement

There is not enough information available to say something about potential improvement. Full access to researchers would be required.

3.3.2 Estonia³

3.3.2.1 Statistics Estonia

Database: Statistics Estonia
<p>Acronym: - Coverage: Estonia Type of data and population target: General statistics to describe Estonia, national database for statistics Web page: https://www.stat.ee/en Source: Statistics Estonia Accessibility for researchers: Open Name of the database in its original language: Statistikaameti andmebaas Other relevant information: Statistikaamet presents the official statistical data regarding Estonia.</p>
Description
<p>Statistikaamet offers official national data in various aspect (e.g. environment, economy, population, integration and etc.) to describe Estonia and general statistics regarding its' population. This can be considered as the main database of Estonia that collects and shares statistics that is open to everyone to see and use. Statistics Estonia is the only one offering database, as the following institutions and organisations carry out studies and present the data via these studies and researches.</p>
Most relevant ICT information
<p>Covering ICT field, one can find statistical data regarding 16-24 years old. It is possible to narrow it more down to specific location (rural area and city life), gender (females and males) or to adults with children in their families. Regarding DigiGen, the following can be considered most fit data to present: Statistikaamet offers statistics for the following:</p> <ul style="list-style-type: none"> - Type of Internet connection at home - Possession of digital devices - Computer and Internet-users regarding their age and the use of Internet (home, work, school and etc) - Skills and knowledge of using Internet, mobile phone, public online services and etc. <p>See list of indicators on ICT in Table A.12. of the Appendix.</p>
Identification of at-risk groups
<p>Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: Yes Other (please specify): In general it is possible to extract the data to describe the large families and/or low educated parents. Regarding statistics connected to ICT, it is not possible.</p>
Strengths
<ul style="list-style-type: none"> - Wide, nationwide coverage with official data - Open-usage, possible to create charts with the specific variables counted in statistics - Covers variety of aspects regarding ICT usage (type of Internet connections to e-commerce)
Weaknesses
<ul style="list-style-type: none"> - The youngest group described is 16-24 years old amongst which no other age-related specification is available - Offers very general, understandably numeric data and statistics, that does not shed light on the connection between well-being and ICT usage or the effects of the latter in any way.

³ Independent research carried out by the private sector (Telia Company)
 Telia CAP has conducted and carried out research "Children's e-learning experiences during COVID-19 during the emergency" (2020). In addition, results from the children's advisory panel study on the topic "What should adults know regarding online games?" (2019). Although these do not represent any consistent monitoring, data gathering and analysis, the contribution of Telia CAP is noteworthy.

Potential improvement

More specific age groups or divide the groups minors and adults and etc; aspects as educational level, income, county-specific place of residence.

3.3.2.2 Ministry of Education and Research

Database: Ministry of Education and Research

Acronym: HTM

Coverage: Estonia

Type of data and population target: Independent researchers regarding the field of education and youth work (students, teachers, school staff, parents and others relevant to the field of education and youth work)

Web page of the ministry: <https://www.hm.ee/en>

English version of studies: <https://www.hm.ee/en/activities/statistics-and-analysis>

Estonian version of the studies: <https://www.hm.ee/et/tegevused/uuringud-ja-statistika-0>

Source: Ministry of Education and Research (HTM)

Accessibility for researchers: Open

Name of the database in its original language: Haridus- ja Teadusministeerium, uuringud ja statistika

Other relevant information: Ministry of Education and Research is responsible for the planning of education, research, youth and language related national policies and, in conjunction thereof, managing the fields of pre-primary, basic, general upper secondary, vocational secondary, higher, hobby and adult education, organising research and development activities, youth work and special youth work, and compiling drafts of corresponding legal acts.

Description

In order to support knowledge-based policy-making, the Ministry of Education and Research and the Ministry's administration regularly carry out analysis, research and evaluation. In addition to the work of the Ministry's analysis department and other experts, studies are also commissioned from outside. Each year, research plans are prepared, which include larger and more extensive research and analyses, as well as international projects, both by the Ministry itself and by administrative agencies.

Most relevant ICT information

The most relevant data created by the Ministry of Education and Research in the field of education:

- [The effect of the usage of ICT resources in teaching: literature review](#) (2018)
- [Applying info-technological possibilities in youth work](#) (2016)
- [The ICT-relevant answers of Estonian students in PISA suggest for unused resources in schools](#) (2013)

Regarding youth work:

- [European Youth Dialogue, analysis of the VII cycle results](#). Includes results on satisfaction with e-services and usage of digital authentication. (2019).
- [Digital participation of young people](#) (2017-2018 yearbook of Youth Monitoring, chapter 5)
- [Report on the project "researching new forms of youth participation"](#) (2016).
- [The Concept of Smart Youth Work](#) (although not a research, but a framework to follow)

Regarding vocational education:

- [Final report on implementation of e-learning in vocational education](#) (2014)

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify): The identification of at-risk groups varies based on the objective of a specific research. There is no agreed setting where every research, study or analysis should focus on at-risk groups. Understandably, youth work field might turn more focus on that compared to general education focus.

Strengths

- A specific topic is comprehensively covered
- Results can be used in developing e.g. new participation forms for young people, creating or using existing participation possibilities online

Weaknesses

- Has the focus on education in general, as well as youth work in general and therefore ICT is not their main focus
- Does not offer statistical database, but research-study based approach
- Inconsistency on researching a specific topic, as the field of Ministry of Education and Research is wide, there is no resource to consistence research on a specific topic.

Potential improvement

More consistent and systematic research and studies regarding specific target groups, at-risk children, development of ICT usage in educational and youth work field.

3.3.2.3 Praxis Centre for Policy Studies Foundation**Database: Praxis Centre for Policy Studies Foundation**

Acronym: PRAXIS

Coverage: Estonia

Type of data and population target: Depends on a research, in general Estonia

Web page: <http://www.praxis.ee/en/what-we-do/>

The work provided by PRAXIS: <http://www.praxis.ee/en/our-works/>

Source: PRAXIS

Accessibility for researchers: Open

Name of the database in its original language: Praxise mõttekoda

Other relevant information: PRAXIS offers to carry out research and studies on the requested topic, so it is rather offering its services instead of collecting and analysing the data on its own initiative. The speciality of PRAXIS is orientation to practical solutions and the most measurable results possible.

Description

PRAXIS is a non-profit and civil initiative think tank that has several fields in focus regarding research and studies. In the field of education, PRAXIS focuses on improving coherence between the education system and labour market, the quality of teaching and equal access to education.

Most relevant ICT information

Carried out and published by PRAXIS relevant to DigiGen

- [Digital turn in education and innovative study material](#) (thematic overview, 2019)
- [ICT education in Estonian schools and kindergartens](#) (2016-2017)
- [Effectiveness and impact of using e-services.](#) (report of a study, 2013)
- [Layering of information: the non-users, small-users and recently started users of Internet](#) (2008).
- [Digital Divide in Estonia and How to Bridge It](#) (2002)

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: In some specific research

Other (please specify): Research carried out by PRAXIS is strictly linked to the funding of the research together with the objective of it. In general they are not doing research on specific at-risk groups - it depends on the funding available for research.

Strengths

- As PRAXIS represents a think tank NGO, to carry out research, collect and analyse the data, they must participate in public procurements and have a collaboration with government representatives. This requires very professional and high-quality work on behalf of them. Also, PRAXIS has wide research field instead of very focused track regarding collecting and analysing the data and carrying out research.

Weaknesses

- As they are dependent on funding, participating in public procurements, PRAXIS itself cannot be very independent regarding what and how to study and research. Rather, their work reflects the need of institutions and wider society on general at the specific time.

Potential improvement

More long-term collaborations with institutions and government representatives, as this would allow again to focus on more consistent and systematic data collection and research planning. Although this is directly linked to the official procurement plans of government representatives and with resources available for public research funding.

3.3.2.4 Information Technology Foundation for Education (HITSA)**Database: Information Technology Foundation for Education**

Acronym: HITSA

Coverage: Specifically ordered research regarding ICT in education

Type of data and population target: Schools, teachers, ICT enthusiasts in education

Web page: <https://www.hitsa.ee/en>

Source: HITSA

Accessibility for researchers: Open

Name of the database in its original language: Hariduse Infotehnoloogia sihtasutus (HITSA)

Other relevant information: -

Description

HITSA is established by the Republic of Estonia, the University of Tartu, Tallinn University of Technology, Eesti Telekom and the Estonian Association of Information and Telecommunications. The role of HITSA is to ensure that the graduates at all levels of education have obtained digital skills necessary for the development of economy and society and that the possibilities offered by ICT are skilfully used in teaching and learning, which helps improve the quality of learning and teaching at all levels of education.

Most relevant ICT information

HITSA carries out specific research regarding ICT in education. Most relevant in the context of DigiGen:

- [Overview of the digital infrastructure in general education schools in Estonia](#) (2014)
- [Activity in the use of ICT resources in general education schools](#) (2013)
- [The effect of teachers' usage of ICT on students' conscious ICT usage](#) (2012)
- [The active usage of ICT resources](#) (2010)

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify): In general, HITSA does not focus solely in at-risk groups, but this may vary regarding specific research or study.

Strengths

- HITSA is dedicated to providing ICT skills among teachers and more recently, among youth workers as well, although its main focus is on education. Also, HITSA is already well-known among teachers and educational technologist (support-staff at schools in Estonia), providing them constantly with trainings and learning materials.

Weaknesses

- As HITSA covers all educational levels in Estonia, its grasp is wide, but cannot therefore allow for a more specific focus (e.g. at-risk groups among certain age groups).
- Although it is well-known among teachers, more collaboration could be done with the field of youth work.

Potential improvement

Next to ICT infrastructure and skills, more focus could be turned to the effects of ICT on the well-being of both teachers and students, but also the social skills that ICT both helps and/or harms.

3.3.2.5 KüberPähkel (CyberNut)

Database: KüberPähkel (CyberNut)

Acronym: -

Coverage: Estonia, data collected each autumn in 2017-2019 among students

Type of data and population target:

Web page: <https://sites.google.com/view/kyberpahkel/esileht?authuser=0>

Source:

Accessibility for researchers: Open

Name of the database in its original language: KüberPähkel

Other relevant information: KüberPähkel is initiated by the Ministry of Defence and carried out by the Centre for Digital Forensics and Cyber Security of the Tallinn University of Technology.

Description

KüberPähkel consists of both a study and testing. The former is carried out among students from 4th - 9th grade (aged 10/11 - 15/16) and the testing is carried out among students from 7th - 12th grade (aged 13/14 - 18/19) from basic education, secondary education and vocational education. As a project-based initiative, it is supported by the Ministry of Defence, [Estonian Internet Foundation](#) and “[Smartly on the Web](#)” project.

Most relevant ICT information

The study covers the following topics:

- Skills and knowledge regarding Internet safety both online behaviour and technical skills regarding devices
- Future topics (robotics)
- Suggestions for both schools and teachers regarding children and their parents

Overview of the final report: https://docs.google.com/document/d/1EeZ4XNaCodA9xcW-tf2SYc-j9aslBUpOKO_KruYI2o6M/edit

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: Yes

Other (please specify): -

Strengths

- Küberpähkel offers quite specific data (e.g. skills in social media, future trends and skills compared between boys and girls). In addition, it enables comparison in time, as KüberPähkel has taken place several times by now.

Weaknesses

- Is largely based on quantitative approach only.

Potential improvement

The usage of mixed methods to offer more profound insight.

3.3.2.6 Smartly on the Web

Database: Smartly on the Web

Acronym: -

Coverage: Estonia

Type of data and population target:

Web page: <https://www.targaltinternetis.ee/en/>

Source: Estonian Union for Child Welfare NGO

Accessibility for researchers: Open

Name of the database in its original language: Targalt internetis

Other relevant information: “Smartly on the Web” is a project led by the NGO Estonian Union for Child Welfare. Within the project small-scale research is conducted regarding online behaviour of minors and their caregivers.

Description
<p>The project's mission is smarter Internet use by children and their parents and prevention of the online distribution of child sexual abuse material. The project is co-financed 50% by the European Commission Connecting European Facility Programme. The project includes:</p> <ul style="list-style-type: none"> - training sessions and seminars for children, parents, teachers and social workers, and awareness-raising events for the general public; - the drafting of training and awareness-raising materials for children, teachers and parents; - creative competitions for students; - assistance and counselling from the Children's Helpline 116111 www.lasteabi.ee children and parents on safe Internet and digital mobile devices use by telephone, MSN (user info@lasteabi.ee) and other IM solutions; - the web-based hotline www.vihjeliin.ee, which allows Internet users to provide information about web environments which contain material that violates children's right to sexual self-determination; notices about other materials that are inappropriate for children may also be sent to Vihjeliin; - cooperation among different stakeholders in Estonia and Europe and participation in the IN-HOPE and INSAFE cooperation network
Most relevant ICT information
<ul style="list-style-type: none"> - Results of the "Smartly on the Web" questionnaire among 4th - 6th grade (2018) - Internet safety. Questionnaire among 15-74 years old (2010)
Identification of at-risk groups
<p>Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: Yes Other (please specify): -</p>
Strengths
<ul style="list-style-type: none"> - The "Smartly on the Web" has a strong collaboration with multiple partner and experts in the field, offering therefore more resources and activities regarding the research on the field.
Weaknesses
<ul style="list-style-type: none"> - As a project-based activity, lacks resources regarding research and data gathering and analysing.
Potential improvement
<p>As the main objective of the project is not to collect and analyse data, there cannot be any suggestions regarding focusing on research more throughout the project.</p>

3.3.2.7 The repository of Tallinn University

Database: The repository of Tallinn University
<p>Acronym: ETERA Coverage: Students work from Tallinn University Type of data and population target: - Web page: https://www.etera.ee/browse Source: BA, MA and PhD dissertations from students in Tallinn University Accessibility for researchers: Open Name of the database in its original language: ETERA Other relevant information: The database allows to search for ICT (IKT in Estonian) in the students research works (BA, MA and PhD works)</p>
Description
<p>ETERA is an electronic database for BA, MA and PhD dissertations from the graduates of Tallinn University. The PhD level dissertations can be useful in the context of DigiGen. As the research topics of students vary greatly, even within the ICT field, it is at this phase impossible to display most relevant information regarding ICT. In the following, only PhD dissertations will be introduced, although adding MA and BA theses, there would be more information.</p>

Most relevant ICT information

All together 32 PhD dissertations can be found with the keyword ICT. Five of them are relevant to DigiGen:

- [Schools development into smart, digitally enhanced learning ecosystems](#) (in English, 2020)
- [Digital play of 0-3 years old and its social mediating](#) (2019)
- [A Digital Safety Model for Understanding Teenager Internet User's Concerns](#) (In English, 2017)
- [Innovative Trends in Technology Education, Teachers' and Students' Assessment of Technology Education in Estonian Basic School](#) (in English, 2015)
- [Consumption of digital screen media among 5-7 years old children and its' social mediation in Estonia. Pedagogical view](#) (2013)

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify): ETERA is a digital repository where the works of Tallinn University graduates are kept and made available to anyone. Although it might contain research focusing on at-risk groups, the above mentioned dissertations do not focus solely on this target-group.

Strengths

- A wide coverage for different research topics regarding ICT.
- Works vary from BA thesis to PhD dissertations and therefore different level of depth in data analysis is offered.

Weaknesses

- The quality of the works kept in ETERA might vary, as they are the works of graduates of Tallinn University.
- There is no possibility to separate in the search process quantitative works from qualitative approach.

Potential improvement

Labelling the works uploaded with keywords that would make the search process more effective (e.g. qualitative/quantitative/mixed methods; sample description and etc.)

3.3.2.8 The repository of the University of Tartu

Database: The repository of the University of Tartu

Acronym: DSpace

Coverage: Students work from the University of Tartu

Type of data and population target: -

Web page: <http://dspace.ut.ee>

Source: University of Tartu

Accessibility for researchers: Open

Name of the database in its original language: DSpace

Other relevant information: -

Description

DSpace at the University of Tartu is a repository for all electronic materials including e-theses and e-publications, digitized theses and books, manuscripts and images etc.

Most relevant ICT information

Below are main PhD dissertations in the field of ICT

- [The perception of cyberbullying among Estonian students according to cyberbullying types and criteria](#) (2020)
- [Managing Imagined Audiences Online: Audience Awareness as a Part of Social Media Literacies](#) (2017)
- [The “good” and the “bad” of the internet: Studying subjective well-being as an outcome of young people’s online practices](#) (2013)
- [Teachers’ roles, instructional approaches and teaching practices in the social-cultural context](#) (2010)
- [The Transformation of the Internet Usage Practices in Estonia](#) (2009)
- [Self-presentation of the “Digital Generation” in Estonia](#) (2009)

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify): DSpace is a digital repository where the works of the University of Tartu graduates are kept and made available to anyone. Although it might contain research focusing on at-risk groups, the above mentioned dissertations do not focus solely on this target-group.

Strengths

- A wide coverage for different research topics regarding ICT.
- Works vary from BA thesis to PhD dissertations and therefore different level of depth in data analysis is offered.

Weaknesses

- The quality of the works kept in DSpace might vary, as they are the works of graduates of the University of Tartu.
- There is no possibility to separate in the search process quantitative works from qualitative approach.

Potential improvement

Labelling the works uploaded with keywords that would make the search process more effective (e.g. qualitative/quantitative/mixed methods; sample description and etc.)

3.3.3 Germany

3.3.3.1 Digital school - networked learning. Results of representative student and teacher surveys on the use of digital media in school lessons

Database: Digital school - networked learning. Results of representative student and teacher surveys on the use of digital media in school lessons

Acronym: ---

Coverage: Germany

Time period: 30.09.2014-13.10.2014 (student survey); 12.12.2013-23.01.2014 (teacher survey) -> publication date: February 2015 (as of June 2020)

Type of data and population target: Survey (student, teacher)

Web page: <https://www.bitkom.org/sites/default/files/pdf/noindex/Publikationen/2015/Studien/Digitale-SchulevernetztesLernen/BITKOM-Studie-Digitale-Schule-2015.pdf>

Source: Bitkom e.V.

Accessibility for researchers: Free access

Name of the database in its original language: Digitale Schule - vernetztes Lernen. Ergebnisse repräsentativer Schüler- und Lehrerbefragungen zum Einsatz digitaler Medien im Schulunterricht

Other relevant information: ---

Description
This study examines the digital use of media in everyday school life as well as the general school conditions. It checks, among other things, the equipment of the schools, the teachers' affinity for technology, the use of digital media for homework etc. 502 teachers (upper secondary education) and 512 students (age 14-19) have participated in this study.
Most relevant ICT information
According to the results of the study, pupils and teachers clearly tend to use digital media for educational purposes on a very regular basis, but many schools are not equipped sufficiently to support and promote this development.
Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: No Other (please specify):
Strengths
-
Weaknesses
- Unfortunately, the socio-economic background has not been relevant for this study. - Study is somewhat outdated. - No comparison between girls and boys.

3.3.3.2 School digital - the federal state indicator 2017. school media education in lower secondary schools with a special focus on MINT subjects in comparison to the other federal states and trends from 2015-2017

Database: School digital - the federal state indicator 2017. school media education in lower secondary schools with a special focus on MINT subjects in comparison to the other federal states and trends from 2015-2017
Acronym: --- Coverage: Germany, comparison of the 16 federal states in Germany Time period: not specified (published in 2017) (as of June 2020) Type of data and population target: Survey (teachers); educational system Web page: https://www.waxmann.com/?elD=texte&pdf=3699Volltext.pdf&typ=zusatztext Source: Deutsche Telekom Stiftung Accessibility for researchers: Free access Name of the database in its original language: Schule digital - der Länderindikator 2017. Schulische Medienbildung in der Sekundarstufe I mit besonderem Fokus auf MINT-Fächer im Bundesländervergleich und Trends von 2015-2017 Other relevant information: ---
Description
This study examines the following aspects: IT equipment in schools and their concepts, use of digital media in school lessons, support of students' ICT skills, teachers' competencies regarding digital media use in class and, finally, digital media use in specific subjects (MINT). 1218 teachers from upper secondary schools have participated in this study.
Most relevant ICT information
It is all about ICT and, therefore, relevant. According to the results of this study, there is a lot of potential that is not being used. The integration of digital media in school seems to be a slow process which varies highly from state to state. Schools are still not equipped appropriately to ensure a steady development. Students have insufficient skills when it comes to navigating themselves on the Internet.

Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: No Other (please specify): federal state (yes)
Strengths
- The study includes a regression analysis which differentiates between age, subject and gender.
Weaknesses
- Only teachers have participated in this study. - Unfortunately, the socio-economic background has not been relevant for this study.

3.3.3.3 JIM study 2019. Youth, Information, Media

Database: JIM study 2018. Youth, Information, Media
Acronym: JIM Coverage: Germany Time period: 28.05.2019 – 17.08.2019 (publication year: 2019) (as of June 2020) Type of data and population target: Survey (young individuals); households, educational system Webpage: https://www.mpfs.de/fileadmin/files/Studien/JIM/2019/JIM_2019.pdf Source: Medienpädagogischer Forschungsverbund Südwest (mpfs) Accessibility for researchers: Free access Name of the database in its original language: Jim-Studie 2019. Jugend, Information, Medien Other relevant information: ---
Description
This study examines the use of digital media of adolescents (age 12-19), to be more precise, how they use digital media, which contents and platforms are relevant and for what purposes they use it. For the investigation the following aspects were relevant: digital equipment (smartphone, laptop, computer, etc.), usage data of different media (radio, TV, books, etc.), use of social media (especially Instagram, YouTube) within the context of family and friends, research techniques on the Internet and other technical media competencies. A specific interest in hate speech (Cyberbullying) and the spreading of fake news is also included. 1.200 adolescents participated in this study.
Most relevant ICT information
The results of the study show that young people grow up with a broad selection of media devices. The smartphone is the most common media device. The majority of the young people are online on a daily basis. YouTube is the favourite online activity and WhatsApp the most popular tool for communicative purposes. Digital games, Netflix and smart TVs are becoming more and more present in young people's lives. Hate comments, fake news and insulting messages are an integral part in any online environment. See list of indicators on ICT in Table A.13. of the Appendix.
Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: No Other (please specify): gender (yes), age (yes), educational background (yes)
Strengths
-

Weaknesses

- - Socio-economic background has not been relevant for this study.
- - No explicit focus on digital media use in school/class/for educational purposes - it is included, though.

3.3.3.4 KIM study 2018. Childhood, Internet, Media**Database: KIM study 2016. Childhood, Internet, Media**

Acronym: KIM

Coverage: Germany

Time period: 24.05.2018 – 30.06.2018 (publication year: 2018) (as of June 2020)

Type of data and population target: Survey (children, parents); households and educational system

Web page: https://www.mpfs.de/fileadmin/files/Studien/KIM/2018/KIM-Studie_2018_web.pdf

Source: Medienpädagogischer Forschungsverbund Südwest (mpfs)

Accessibility for researchers: Free access

Name of the database in its original language: KIM-Studie 2018. Kindheit, Internet, Medien

Other relevant information: ---

Description

This study examines the use of digital media of children (age 6-13), to be more precise, how they use digital media, which contents and platforms are relevant and for what purposes they use it. For the investigation the following aspects were relevant: digital equipment (smartphone, laptop, computer, etc.), usage data of different media (radio, TV, books, etc.), use of social media (WhatsApp, Instagram, etc.) within the context of family and friends, research techniques on the Internet and other technical media competencies. A total of 1 231 German-speaking children and their parents/guardians participated in this study.

Most relevant ICT information

Children today grow up with a very broad media repertoire. The results of the KIM Study 2018 show that, despite the highly dynamic nature of the media world as a whole, the everyday media life of primary school children is generally characterised by high stability. Social media platforms and other moving images (e.g. YouTube) are usually more relevant for older children; the younger ones only use them partially. Watching TV is still at the top of all media use activities. Moving images, especially YouTube, are becoming more and more significant for children. See list of indicators on ICT in Table A.14. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes (but only if they and their parents speak German fluently)

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: No

Other (please specify): gender (yes), age (yes), educational institution (yes), federal state (yes)

Strengths

- Especially the comparison between age groups/educational phase is very informative and relevant (digital media use varies significantly).

Weaknesses

- Socio-economic background has barely been relevant for this study.
- No explicit focus on digital media use in school/class/for educational purposes - it is included, though.

3.3.3.5 Thinking about tomorrow: Study on the effects of digitization on education and work - A representative survey among parents in Germany

Database: Thinking about tomorrow: Study on the effects of digitization on education and work - A representative survey among parents in Germany.

Acronym: ---

Coverage: Germany

Time period: 04.09.2014 – 26.09.2014 (publication year: 2014) (as of June 2020)

Type of data and population target: Survey (parents); households, educational system

Webpage: https://www.vodafone-institut.de/wp-content/uploads/2015/09/VFI_Allensbach_DE.pdf

Source: Vodafone Institut für Gesellschaft und Kommunikation

Accessibility for researchers: Free access

Name of the database in its original language: Denk ich an morgen: Studie zu den Auswirkungen der Digitalisierung auf Bildung und Beruf – Eine repräsentative Umfrage unter Eltern in Deutschland.

Other relevant information: ---

Description

This study examines how parents feel regarding the digital challenges that their children will be faced with in and after school.

A total of 1,126 interviews with a representative cross-section of parents of school children in general education schools.

Most relevant ICT information

As the study focuses only on ICT it is highly relevant.

The results of the study show that the parents are aware of the challenges and consequences that result from the increasing digitalization. They know that a specific training and special skills are required in order to be able to keep up with the competition in the labour market.

Identification of at-risk groups

Immigrant children: No

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: No

Urban / rural: no

Other (please specify): age groups (class 8-10; 10-12 (G-8), 11-13 (G-9))

Strengths

- Socio-economic background has been relevant for this study

Weaknesses

- Only the parents' perspective is used.

Sample questions

When my children start working, I expect to see:

- good computer and literacy skills are even more important
- You have to be available at all times for your work
- increasing demands on employees
- jobs are becoming less secure

When my children start working, I expect increasingly insecure jobs.

- Parents from higher, middle, lower socio-economic levels.

Due to the increasing digitalization (Parents of higher, middle, weaker socio-economic level):

- jobs are created
- not much will change
- jobs will be lost

3.3.3.6 Monitor Digital Education. Schools in the digital age

Database: Monitor Digital Education. Schools in the digital age

Acronym: ---

Coverage: Germany

Time period: not specified (publication year: 2017) (as of June 2020)

Type of data and population target: Survey (parents); households, educational system

Webpage: https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/BSt_MDB3_Schulen_web.pdf

Source: Bertelsmann Stiftung

Accessibility for researchers: Free access

Name of the database in its original language: Monitor Digitale Bildung. Die Schulen im digitalen Zeitalter

Other relevant information: ---

Description

The most important research questions are: Do digital technologies improve and stimulate learning for new didactic concepts in school, training, studies and further training?

How can learning with digital media support disadvantaged learners and increase overall access to the individual education sectors? How can teachers be prepared for the deployment - and where appropriate the creation - of digital educational media?

In total 1 235 students, 542 teachers, 242 principals, 30 stakeholders and experts participated in this study.

Most relevant ICT information

The results of the study show that schools do not see the pedagogical potential that goes with the digitalization, that there is a lack of proper strategies and concepts, that the wireless access is insufficient, that the most popular medium for learning purposes are videos and that teachers preferably use digital learning material that is for free.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): No

Low educated parents: Yes

Children with disabilities: Yes

Urban / rural: Yes

Other (please specify): different age and focus groups

Strengths

- Socio-economic background has been relevant for this study.
- Focus on education and school.

Weaknesses

- The family size is not available

3.3.4 Greece

3.3.4.1 Safer Internet for Kids Survey for children's online habits, social media influence and online gaming

Database (Survey conducted under the auspices of the Ministry of Education): Safer Internet for Kids Survey for children's online habits, social media influence and online gaming

Acronym: SaferInternet4Kids Survey 2019-2020

Coverage: Greece

Time period: (as of month 2020) November and December 2019 (as of June 2020)

Type of data and population target: Greek students of age 10-17, judgment sampling (13.000 were asked, aged 10-17 in schools of the municipalities of Attica, Thessaloniki, Ioannina, and Heraklion and the regional area of Evros and the Dodecanese.

Web page: <https://saferinternet4kids.gr/wp-content/uploads/2019/06/2019-ερευνα-γενικο-GR.pdf>

Source: Greek Safer Internet Centre (SIC)

Accessibility for researchers: -

Name of the database in its original language: Έρευνα για τις διαδικτυακές συνήθειες των μαθητών, Ελληνικό Κέντρο Ασφαλούς Διαδικτύου

Other relevant information:

Description

The main goal of the research conducted by the Greek Safer Internet Centre of the Foundation for Research & Technology – Hellas (FORTH), was to capture the online habits of children and their attitudes towards social media and gaming. The survey is supported by Ministry of Education, Research and Religions and wants among others to make conclusions on how social-media content and acceptance affects the everyday life of adolescence in Greece.

Most relevant ICT information

- When you upload a photo on the Web are you anxious about how many likes it will have?
- Did your parents place any restrictions concerning the video content that you watch on the Web?
- What kind of social-media networks do you use (Instagram, Facebook, Twitter, Viber, Snapchat or Tik Tok)?
- Do you use YouTube?
- Is your social-profile open or private?
- Do you accept friend-requests in social-media?
- Has anyone tried to contact you through the social-media network that you use?
- Do you play online games?
- Do you play online games with someone that you don't know in the physical world?
- Do you chat with people that have met through online gaming?
- Would you say that you are addicted to online gaming?
- Do you know how to protect your electronic devices from harmful software? Do you know the existing tools?
- Do you believe that everything you read on the Internet is true?
- Have you ever been a victim of misinformation (e.g. believed something that turned out to be fake news)?

See list of indicators on ICT in Table A.15. of the Appendix.

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: Education of parents is divided into two categories: Basic Education and University Education

Children with disabilities: No

Urban / rural: 5 big cities are covered

Other (please specify):

Strengths

- Highly relevant questions that focus among other things on wellbeing

Weaknesses

- No indicators on background variables making identifying at-risk groups difficult

3.3.4.2 Safer Internet for Kids Survey for the online behaviour of students aged 10-17 years old in Greece

Database (Survey conducted under the auspices of the Ministry of Education): Online behaviour of students aged 10-17 years old in Greece

Acronym: SaferInternet4Kids Survey, 2018

Coverage: Greece

Time period: (as of month 2020) November and December 2018 (as of June 2020)

Type of data and population target: Greek students of age 10-17, judgment sampling (14.000 were asked, aged 10-17 from 400 schools in Athens, Thessaloniki, Heraklio, Larissa and Patra.

Web page: <https://saferinternet4kids.gr/wp-content/uploads/2019/06/2019-ερευνα-γενικο-GR.pdf>

Source: Greek Safer Internet Centre (SIC)

Accessibility for researchers: -

Name of the database in its original language: Έρευνα για τις διαδικτυακές συνήθειες των μαθητών, Ελληνικό Κέντρο Ασφαλούς Διαδικτύου

Other relevant information:

Description

The main goal of the research conducted by the Greek Safer Internet Centre of the Foundation for Research & Technology – Hellas (FORTH), was to capture the online habits of children and draw safe conclusions that will be used as guidelines in planning the policy of waking up and informing the Centre for Children, parents and teachers. The aim is also to integrate this research into a more general cohort study and to capture the changes in perceptions and online habits through time. At the same time, as it is the largest sample survey of such content in the country, it can be a tool for policy planning by decision-making centres such as the Ministry of Education, Research and Religions regarding the information and training of students for safe use of the Internet. In any case, it is a useful tool in the hands of the educational community as the research highlights the distorted habits of children during the use of the Internet, which can lead them to difficult or even dangerous situations.

Most relevant ICT information

- At what age did you begin to connect to the Web?
- What was your first electronic device?
- At what age did you get your first smartphone?
- Smartphone use for connecting to the Web.
- Frequency of Web connection.
- What do you usually do when you connect to the Web?
- Did someone teach you how to connect to the Web?
- Do you connect to the Web alone or under parental supervision?
- Did your parents place any restrictions for using the Web?
- Do you feel well informed about the risks of connecting to the Web?
- How do you get your information about risks related to the Web?
- From whom would you ask for help if something risky should happen?

See list of indicators on ICT in Table A.16. of the Appendix.

Identification of at-risk groups

Immigrant children: no

Poor children: no

Large families (3+ children): no

Low educated parents: Education of parents is divided into two categories: Basic Education and University Education

Children with disabilities: no

Urban / rural: 5 big cities are covered

Other (please specify):

Strengths

- Several questions and a set of indicators on use and some risk related factors

Weaknesses

- No background variables allowing for identifying at-risk groups

3.3.4.3 European Research on Internet use by young people

Database: European Research on Internet use by young people

Acronym: EU NET ADB
 Coverage: GR, ES, PO, DE, RO, NL, IS
 Time period: (as of month 2020) 2011-2013 (as of June 2020)
 Type of data and population target: 13284 adolescents 14-17, probability sampling
 Web page: <https://www.youth-life.gr/en/activities/welcome-to-the-eu-net-adb-project-s-homepage>
 Source: Adolescence Health Unit (AHU) of the University of Athens Children Clinique,
 Accessibility for researchers: -
 Other relevant information:

Description

The Adolescent Health Unit (AHU) of the Second Department of Pediatrics, Athens University participated in the EU NET ADB research project aimed to augment the knowledge base of the Internet addictive behaviour risk among adolescents in Europe. The participating countries are Greece, Spain, Poland, Germany, Romania, the Netherlands and Iceland. A representative sample of 13 284 adolescents aged 14-17 years who are in education, from these seven European countries, was surveyed between October 2011 and May 2012. The survey included questions regarding adolescents' Internet access and use; Internet addictive behaviour; online communication and social networking; computer gaming and gambling; and other potentially risky as well as positive experiences.

Most relevant ICT information

Internet use, access to Internet, ICT and Internet competences and skills, social media, cyberbullying and Gaming. See list of indicators on ICT in Table A.17. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes
 Poor children:
 Large families (3+ children): Yes
 Low educated parents:
 Children with disabilities: No
 Urban / rural:
 Other (please specify): type of family (one parent family, death of one/both parents, etc.), labour market state of parents (employed, unemployed, inactive), parental occupation

Strengths

- Health and wellbeing focus and some background indicators

Weaknesses

- Could have more background indicators to allow for better identification of at-risk groups

3.3.5 Norway

3.3.5.1 Ungdata

Database: Ungdata

Acronym: Ungdata
 Coverage: Norway (counties)
 Time period: 2010 - 2020 (ongoing) (as of June 2020)
 Type of data and population target: School based survey (Individuals attending secondary school and High school)
 Web page: www.ungdata.no
 Source: Documentation-report: <http://www.ungdata.no/ungdata/Forskning/Metode-og-dokumentasjon/Ungdata-dokumentasjonsrapport-2010-2019>
 Accessibility for researchers: Available for free by application to NSD (<https://nsd.no/nsddata/serier/ungdata.html>)
 Name of the database in its original language: Ungdata
 Other relevant information:

Description

Ungdata is a cross-national data collection scheme, designed to conduct youth surveys at the municipal level in Norway. Ungdata covers various aspects of young people's lives, like the use of media in general, social media, gaming, and ICT as well as e.g. relationship with parents and friends, leisure activities, health issues, local environment, well-being, and school issues. The surveys also include questions about tobacco and drug use, and participation in various forms of antisocial behaviour such as violence and bullying. The survey consists of a core module and different add-on-modules that may be included by the municipalities. Questions about the survey may be directed to the Ungdata-secretariat at: ungdata@nova.hioa.no

Most relevant ICT information

In the core module (all respondents): Leisure activities (Played online games with friends, spent time socializing on social media or mobile phone), Media-usage - hours/ daily total (TV, YouTube, gaming, mobile phone/ tablet gaming, Social media use).

Add-on-modules: ICT-use - frequency (Gaming, using computer for homework, surfing the Internet, looking for information on the Internet, keep in touch with friends via Internet, Use Internet to communicate with new people, write blogs).

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: Yes

Urban / rural: Yes

Other (please specify):

Strengths

- Ungdata is regarded as the most comprehensive source of information on adolescent health and well-being at the municipal and national levels.
- Size (since 2010, 640 000 respondents have contributed to the survey)
- Nationally representative
- High response rates
- Constantly evolving and quality/ relevance checked

Weaknesses

- Cross-sectional
- Add-on-modules are voluntary for municipalities; thus all questions are not necessarily nationally representative

3.3.5.2 Ungdata Junior**Database: Ungdata Junior**

Acronym: Ungdata Jr

Coverage: Norway (counties)

Time period: (as of month 2020) 2017 - ongoing (as of June 2020)

Type of data and population target: School based survey (Children aged 10 - 12 attending upper primary school)

Web page: <http://www.ungdata.no/Ungdata-junior/Hva-er-Ungdata-junior>

Source: Documentation report (<http://www.hioa.no/content/download/148760/4142507/file/Web-NOVA-Rapport-3-2018-Metoderapport-Ungdata-junior-2017-16-april-ny-Bookmarks.pdf>)

Accessibility for researchers: Free on application

Name of the database in its original language: Ungdata Junior

Other relevant information:

Description

The Ungdata Jr surveys were initiated in 2017 as school-based surveys offered to the municipalities. The surveys are conducted online in class. Results from the surveys are used in the municipalities work with the age group 10 - 12-year olds. In addition data are available for researchers. The survey covers 8 main topics: Quality of life, Parents, Friends, School, Neighbourhood, Leisure activities, Bullying and Health.

Most relevant ICT information

Leisure activities (Gaming on different devices, social media use/ screen time), Parental control (allowed to have a user account on social media, allowed to play games with age limit 18, restrictions on gaming-time), self evaluation of gaming related problems (playing too much, away from school because of gaming, gaming after going to bed).

Identification of at-risk groups

Immigrant children: yes
 Poor children: Yes
 Large families (3+ children): Yes
 Low educated parents: Yes
 Children with disabilities: Yes
 Urban / rural: Yes
 Other (please specify):

Strengths

- Comprehensive survey covering a range of different aspects of the lives and health of children aged 10 – 12
- Size:
- Coverage: nationally representative
- Response rates
- Constantly evolving and quality/ relevance checked

Weaknesses

- Cross sectional
- Voluntary municipal participation

3.3.5.3 Barn og medier undersøkelsen (Survey of children and media)**Database: Barn og medier undersøkelsen (Survey of children and media)**

Acronym: Barn og Medier

Coverage: Norway,

Time period: (as of month 2020): 2003 – 2020 (as of June 2020)

Type of data and population target: Children aged 9 - 18

Web page: <https://medietilsynet.no/barn-og-medier/barn-og-medier-undersokelsen/>

Source: Methodological report: <https://medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2020/200518-metodeinformasjon-barn-og-medier-2020.pdf>

Accessibility for researchers: Owned by Norwegian Media Authority

Name of the database in its original language: Barn og medier undersøkelsen

Other relevant information:

Description

The Barn og Medier (Children and Media) survey is commissioned by the Norwegian Media Authority. The survey is school based and directed at children aged 9 – 18. The survey was conducted in 2003, 2006, 2008, 2010, 2012, 2014, 2016, 2018 and 2020. The purpose of the survey is to collect a comprehensive overview of media use among children and youth in Norway. Participating schools are recruited by clustered sampling. Results are weighted by the population distribution on gender, age and part of the country.

Most relevant ICT information

The survey includes information on children and young people's digital participation, digital competence and judgement in addition to the young people's experience of parental control and involvement in their digital lives. In addition media-habits on social media, gaming and television is mapped as well as types of activities and experiences online (bullying/ harassment, sexual comments, porn), critical evaluation of source and attitudes to regulation. Recent years questions on digital marketing has been added.

Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: Yes Other (please specify):
Strengths
<ul style="list-style-type: none"> - Long observation time - Nationally Representative - Constantly evolving through quality and relevance testing
Weaknesses
<ul style="list-style-type: none"> - Cross-sectional - Due to a rapidly changing digital landscape, the survey has evolved limiting the potential long-term comparisons in some areas

3.3.5.4 Foreldre og medier undersøkelsen (Parents and media survey)

Database: Foreldre og medier undersøkelsen (Parents and media survey)
Acronym: - Coverage: Norway Time period: (as of month 2020): 2003 – 2020 (as of June 2020) Type of data and population target: Individual data. Parents of children aged 1 – 18. Web page: https://medietilsynet.no/barn-og-medier/barn-og-medier-undersokelsen/ Source: Parents and media survey report 2018: https://medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2018-foreldre-og-medier Accessibility for researchers: Owned by Norwegian Media Authority Name of the database in its original language: Other relevant information:
Description
The survey is commissioned by the Norwegian Media Authority. The survey is directed at parents with children aged 1 – 18. Parents are recruited from a web-panel by random selection. The survey was conducted in parallel with Barn og Medier (Children and Media) survey in 2003, 2006, 2008, 2010, 2012, 2014, 2016, 2018 and 2020.
Most relevant ICT information
The main focus of the survey is to map parents' experiences with their children's use of digital media, parental control and opinions on their children's use of digital media.
Identification of at-risk groups
Immigrant children: No Poor children: Yes, parental income Large families (3+ children): No Low educated parents: Yes Children with disabilities: No Urban / rural: No Other (please specify):
Strengths
<ul style="list-style-type: none"> - Runs parallel to the children and media survey allowing for revealing potential gaps between parents and children report on digital media, competence and attitudes.
Weaknesses
<ul style="list-style-type: none"> - Limited information on at-risk groups

3.3.5.5 Culture and Mass Media Survey

Database: Culture and Mass Media Survey

Acronym: -

Coverage: Norway

Time period: (as of month 2020) 1993 - ongoing (Annual) (as of June 2020)

Type of data and population target: Representative sample of the population aged 9 - 79

Web page: https://nsd.no/nsddata/serier/mediebruksundersokelsene_eng.html

Source:

Accessibility for researchers: Free for researchers on application to NSD

Name of the database in its original language: Kultur og mediebruksundersøkelsen

Other relevant information:

Description

The purpose of this study is to provide a comprehensive presentation of the Norwegians' use of different types of mass media and cultural facilities and the supply of entertainment. The objective of the survey is to map out the extent of people's usage of mass media, give an image of seasonal varieties in this usage, find out what kinds of media and channels different demographic groups utilizes, as well as measuring what sorts of media channels different demographic groups have access to.

Most relevant ICT information

Information on gaming and the use of computers: access and hours. Information on Internet access at home, ways of using Internet (work, education, leisure etc.).

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: Yes

Urban / rural: Yes

Other (please specify):

Strengths

- Nationally representative
- Comprehensive information on the use of mass media

Weaknesses

- Small sample of children/ youth

3.3.5.6 The student survey

Database: The student survey

Acronym:

Coverage: Norway

Time period: Annually since 2016 (as of June 2020)

Type of data and population target: All students in upper primary through upper secondary school.

Web page: <https://www.udir.no/tall-og-forskning/brukerundersokelser/elevundersokelsen/>

Accessibility for researchers: Limited to generating general reports through the webpage. Researchers may be given access by application to the Norwegian directorate for education.

Name of the database in its original language: Elevundersøkelsen

Other relevant information:

Description

Annual survey aimed at students in upper primary through upper secondary school allowing students to give their opinion on learning and well-being in school.

Most relevant ICT information

Digital bullying

Identification of at-risk groups
Immigrant children: Yes Poor children: Yes Large families (3+ children): Yes Low educated parents: Yes Children with disabilities: No Urban / rural: Yes Other (please specify):
Strengths
<ul style="list-style-type: none"> - Includes all students from age 11 - Mandatory for schools to implement
Weaknesses
<ul style="list-style-type: none"> - Does not include children/ youth not in school - Limited details on the use of ICT in education

3.3.6 Romania

3.3.6.1 Study on the use of the Internet by children (Studiu Privind utilizarea Internetului de către copii)

Database: Study on the use of the Internet by children (Studiu Privind utilizarea Internetului de către copii)
Acronym: - Coverage: Romania Time period: Data collected April – September 2018 (as of June 2020) Type of data and population target: social survey based on self-completed questionnaire; children using the Internet, regardless of the device they are browsing. Web page: https://oradenet.salvaticopiii.ro/docs/Studiu-privind-utilizarea-internetului-de-ca-tre-copii-v2-online.pdf Source: Save the Children Romania Accessibility for researchers: Closed Name of the database in its original language: Studiu Privind utilizarea Internetului de către copii Other relevant information: Data collection: April-September 2018
Description
The study provides an overview on how children use the Internet, the devices they use to go online and the environments in which they spend time on the Internet. Its scope is to highlight the opportunities and risks associated with using the Internet and to address the socio demographic differences in ICT usage.
Most relevant ICT information
It contained data from 1 156 children, age between 12 and 17. It is possible to narrow the data to more specific socio demographic elements such as place of residence, child's age and gender. Offers statistics information in regard to: <ul style="list-style-type: none"> - ICT usage by children - ICT in an educational context - Gaming - Use of Internet and the emotional well-being of children
Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: Yes Other (please specify): As a self-administrated online survey data is based only on children that have access to Internet

Strengths

- Consistent sample of 1 156 children
- Covers variety of aspects regarding ICT usage
- Children are the respondents
- Focus on risks on the Internet

Weaknesses

- Non-probabilistic sampling
- No variables for social background or information on the family
- database cannot be accessed directly on the Internet, permissions to manipulate data is required

3.3.6.2 Friends 2.0 (2015-2017)**Database: Friends 2.0 (2015-2017)**

Acronym: Friends 2.0 (2015-2017)

Coverage: Cluj-Napoca and Bucharest, representative samples

Time period: (as of month 2020) April-June 2016 (as of June 2020)

Type of data and population target: children 10-18, SNS users

Web page: <https://www.facebook.com/prietenii2punct0/>

Source: Friends 2.0 dataset

Accessibility for researchers: access only with team member included

Name of the database in its original language: n/a

Other relevant information: Monica Barbovschi

Description

Extensive study on children's online friendship and personal data misuse experiences, body image satisfaction scale, social inclusion scale. Inspired by the work of Bukovski (1994), Ladd et al. (1996) and Wright (1991), the study developed a scale with 43 items measuring six dimensions of friendship quality, namely: validation, help, self-disclosure, conflict, exclusivity, and companionship.

Three phases of data collection: focus-groups, school survey, paired interviews with best friends. A total sample of 1 562 adolescents 10-19 years old was randomly selected from the population studied, that is the total population from middle and high school from two of the largest cities in Romania that are economically similar but from two different cultural regions: Bucharest and Cluj-Napoca. Stratified sampling procedure was used - two strata: secondary schools and high schools; each unit was randomly extracted from the school board lists, with a statistical step calculated for each city in the sample. 30 schools selected in the sample participated after being informed about the study aims and design through written and personal communication. In each school four classes were chosen by the director or one of the professors (Classes varied in size from 17 to 29 students; in average 20 children per class). All data were collected during regular school hours, abiding the ethical guidelines for conducting research with children and young people (as approved by the National School Board. Data collection took approximately 30-50 min and included, besides the items in Quality of Friendship Scale, different questions regarding age, gender, SNS use, PDM situations, Social inclusion scale, Body Image scale. Children who don't have any active account on at least one SNS were excluded from the database. After missing data was considered, the present study reports on a sample of 1 502 adolescents. There was a slightly majority of boys (54%) with a mean age of 14.5 years (SD = 2.1 year). At the time the survey was conducted, 668 children were in middle school, while 824 in high school.

Most relevant ICT information

Access, devices, uses, risks, dimensions of online friendship, Personal data misuse experiences, coping

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: No

Urban / rural: only children in two urban areas

Other (please specify): at-risk of personal data misuse by peers, perceptions about revenge porn, justification of revenge porn

Strengths

- Extensive questionnaire on dimensions of online friendship for adolescents

Weaknesses

- No information on SES, household beyond a few questions related to devices, but schools from poorer areas in the cities were included in the sample

3.3.6.3 School in State of Emergency the Access of School Children from Romania to Online Education (Școala în Stare de Urgență Accesul Copiilor Școlari din România la Educație Online)

Database: School in State of Emergency the Access of School Children from Romania to Online Education (Școala în Stare de Urgență Accesul Copiilor Școlari din România la Educație Online)

Acronym: -

Coverage: Romania

Time period: Data collected 27 -30 April 2020 (as of June 2020)

Type of data and population target: randomize sample, data collected through CATI (Computer Assisted Telephone Interviewing) procedure. social survey based on self-completed questionnaire; parents with children in school

Web page: (report) https://ires.ro/uploads/articole/ires_accesul-copiilor-scolari-din-romania-la-edu-catie-online_studiu-national_aprilie-2020.pdf

Source: IRES - Romanian Institute for Evaluation and Strategy

Accessibility for researchers: Closed (?)

Name of the database in its original language: Școala În Stare De Urgență Accesul Copiilor Școlari Din România La Educație Online

Other relevant information: -

Description

This study provides an overview on the online educational context in Romania, parents response to the changes in the educational context caused by Covid19 crisis, quality of the online education from the parents' perspective and families Internet connection.

Most relevant ICT information

It contained data form a national representative sample of 1 319 parents with children aged between 0 and 19 years; 1060 parents have at least one child enrolled in school. It is possible to narrow the data to more specific socio demographic elements such us place of residence, child's age and gender.

Offers statistics information in regard to:

- Access to online education
- Quality of the educational act in the context of the crisis
- Parents' response to the Covid 19 crisis
- Children and family's access to ICT (e.g. devices per household, Internet connection)

Identification of at-risk groups

Immigrant children: No

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: Yes

Urban / rural: Yes

Other (please specify): -

Strengths

- National representative sample of 1 319 parents
- Contains information on situation present in the Romania school/education system in the context of Covid-19 crisis.
- Contains recent data
- Data on the level of connection that Romanian families have to the Internet

Weaknesses

- focuses only on the online educational context
- it is based solely on information provided by parents
- database cannot be accessed directly on the Internet, permissions to manipulate data may be required

Potential improvement

Recent data on Internet connection and devices per household. In context of Covid-19 crisis old data on ICT access, such as devices per household, may present a distorted image. Nowadays parents who for a variety of reasons did not want / could not buy devices are being forced to buy more devices so that all children can attend online classes).

3.3.7. Spain**3.3.7.1 Survey on equipment and use of information and communication technologies in homes****Database: Survey on equipment and use of information and communication technologies in homes**

Acronym: -

Coverage: Spain

Type of data and population target: Annual survey. Population living in main family dwellings

Web page: https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=estadistica_C&cid=1254736176741&menu=ultiDatos&idp=1254735976608

Source: INE (Spanish National Institute of Statistics)

Accessibility for researchers: Free access

Name of the database in its original language: Encuesta sobre equipamiento y uso de tecnologías de información y comunicación en los hogares

Other relevant information: -

Description

The general objective of the ICT Survey is to obtain data on the development and evolution of the Information Society. For this, information is collected on household equipment in information and communication technologies (television, fixed and mobile telephony, computer equipment), the use that the Spanish population makes of the Internet, relations with electronic administration, the use of commerce electronic, security and confidence in the use of the Internet, computer skills and knowledge, and the use of new technologies at work. Special attention is devoted to children's use of technology.

Most relevant ICT information

Equipment of the main house in information and communication technology products, access to Internet, mobile and Internet use, use of shared economy services, electronic administration, security and confidence, computer knowledge and eCommerce. Related to children: computer and Internet use. See list of indicators on ICT in Table A.18. of the Appendix

Identification of at-risk groups

Immigrant children: No

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: No

Urban / rural: No

Other (please specify):

Strengths

- Wide range of ICT indicators

Weaknesses

- Few ICT indicators in children

Potential improvement

This survey could be improved by using more ICT indicators in children

3.3.7.2 Family budget survey

Database: Family budget survey
<p>Acronym: EPF Coverage: Spain Type of data and population target: Annual survey. Households Web page: https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176806&menu=ultiDatos&idp=1254735976608 Source: INE (Spanish National Institute of Statistics) Accessibility for researchers: Free access Name of the database in its original language: Encuesta de Presupuestos Familiares Other relevant information: -</p>
Description
<p>The Family Budget Survey (EPF) provides annual information on the nature and destination of consumer spending, as well as on various characteristics related to household living conditions. Consumption expenses refer both to the monetary flow that the household allocates to the payment of certain goods and services for final consumption, and to the value of the goods received as self-consumption, self-supply, wages in kind, free or subsidized meals and imputed rent to the dwelling in which the home resides.</p>
Most relevant ICT information
<p>Spending on Internet connection, acquisition of personal computers, tablets, videogames, and software packages. See list of indicators on ICT in Table A.19. of the Appendix</p>
Identification of at-risk groups
<p>Immigrant children: Yes Poor children: Yes Large families (3+ children): Yes Low educated parents: Yes Children with disabilities: No Urban / rural: Yes Other (please specify):</p>
Strengths
<ul style="list-style-type: none"> - Multiple at-risk groups can be identified.
Weaknesses
<ul style="list-style-type: none"> - The information on ICT is limited to household spending

3.3.7.3 Sociological research centre: consumer confidence index

Database: Sociological research centre: consumer confidence index
<p>Acronym: CIS - ICC Coverage: Spain Type of data and population target: National population above 16 years Web page: http://www.cis.es/cis/opencms/ES/index.html Source: Centro investigaciones sociológicas Accessibility for researchers: Free access Name of the database in its original language: Centro investigaciones sociológicas: índice de confianza del consumidor Other relevant information: -</p>
Description
<p>The ICC allows consumers to approach their spending intentions by asking them about their current perception and future expectations for the country's economy, its family economy and employment. It is based on a monthly survey conducted by telephone to a sample of 2 200 individuals over the age of 16, representative of the whole of Spanish society. The final objective of this index, within the battery of economic indices prepared by Spanish institutions, is to be a useful tool to interpret and predict the evolution of private consumption in Spain.</p>
Most relevant ICT information
<p>Acquisition of a computer. See list of indicators on ICT in Table A.20. of the Appendix</p>

Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: Yes Children with disabilities: Urban / rural: Yes Other (please specify):
Strengths
-
Weaknesses
-

3.3.7.4 Statistics of the Information and Communication Society in non-university educational centres

Database: Statistics of the Information and Communication Society in non-university educational centres
Acronym: - Coverage: Spain Type of data and population target: public and private schools Web page: http://www.educacionyfp.gob.es/en/servicios-al-ciudadano/estadisticas/no-universitaria/centros/sociedad-informacion/2018-2019.html Source: Ministerio de educación y formación profesional Accessibility for researchers: Free access Name of the database in its original language: Estadística de la Sociedad de la Información y la Comunicación en los centros educativos no universitarios Other relevant information: -
Description
The Statistics of the Information and Communication Society in non-university educational centres has the specific objective of knowing the situation of public and private centres (up to upper secondary school) regarding the use of new technologies. It aims at knowing whether the general educational objectives of the Ministry of Education are being followed.
Most relevant ICT information
Number of operating computers in each centre, type of computer, location of the computer (computer room, classroom, other units, not defined), tasks for which the computer is preferably used (administrative tasks, teaching staff, students, etc.), computers for student-centered tasks with connection, Internet (Internet connection, connection type, bandwidth), Wi-Fi, digital systems, virtual learning environment, cloud services and mobile use for educational purposes. See list of indicators on ICT in Table A.21. of the Appendix.
Identification of at-risk groups
Immigrant children: No Poor children: No Large families (3+ children): No Low educated parents: No Children with disabilities: No Urban / rural: No Other (please specify):
Strengths
<ul style="list-style-type: none"> - Multiple ICT indicators - Indicators can be drawn at the Spanish regional level - Indicators can be drawn at different educational levels (from primary school to upper secondary high school)
Weaknesses
<ul style="list-style-type: none"> - No information from the children's point of view - No information on socio-demographic characteristics of the students

3.3.8 UK

3.3.8.1 British Educational Suppliers Association

Database: British Educational Suppliers Association

Acronym: BESA

Coverage: UK

Time period: 2012-2017 (as of June 2020)

Type of data and population target: Education and Training Statistics for the UK

Info age, gender and school type

Web page: <https://www.besa.org.uk/key-uk-education-statistics/>

Source: Department for Education; Welsh Government; Scottish Government; Northern Ireland Department of Education (2018/19) - open

Source: The Education Company (2019)

Accessibility for researchers: Open only for BESA members

Name of the database in its original language: -

Other relevant information: -

Description

Basic education stats as seen through the lens of the organization representing tech and content suppliers to schools in the UK. There are data tables, including a breakdown of numbers of pupils by age of the following information:

How many schools are there in the UK: 32 770.

How many Multi Academy Trusts are there: 1 170.

How many pupils are there in the UK: 10m approx.

How many teachers are there in the UK: 500K approx.

How big is a UK school's budget: 1m approx. for primary and 4.5m for secondary

How much is spent on resources each year: primary 40K approx. and secondary 172K approx.

How many computers are there in UK classrooms: See next section

How many FE institutions are there: 381

How many universities are there: 142

What are some of the best sources of data about schools in the UK

1. [DfE: Education and Training Statistics for the United Kingdom: 2017](#)
2. [DfE: School workforce in England: November 2016](#)
3. [DfE: local authority and school finance 2016](#)
4. [BESA: Resources in English Maintained Schools 2017](#)
5. [BESA: ICT in UK State Schools 2017](#)
6. [The Key: State of Education Report 2017](#)
7. [TES: Teacher Recruitment Index](#)

Most relevant ICT information

The page is restricted for this question: How many computers are there in UK classrooms? There is the following info on original site:

In total there are 3 392,100 computers in UK classrooms in 2017. There are 1 543,700 in primary schools and 1,848,400 in secondary schools. The average primary school has 69.8 computers and the average secondary school has 430.7.

Source: BESA/C3 Education (2017). This report, which includes a detailed breakdown on types of devices and projections for 2018, can be downloaded by BESA members here. <https://www.besa.org.uk/insights/ict-uk-schools-2017/>

Identification of at-risk groups

Immigrant children: No

Poor children: No

Large families (3+ children): No

Low educated parents: No

Children with disabilities: There is info on special schools.

Urban / rural: No

Other (please specify): Post-compulsory education and training data: Young people not in education employment or training aged from 16-24.

Strengths

- It offers a general and basic education stats as seen through the lens of the organisation representing tech and content suppliers to schools in the UK.

Weaknesses

- Nothing on at risk groups except the post-compulsory education data.

Potential improvements

Nothing on at risk groups except the post-compulsory education data.

3.3.8.2 Office of Communications**Database: British Educational Suppliers Association**

Acronym: OFCOM

Coverage: UK

Time period: 2014-2020 (as of June 2020)

Type of data and population target: year 1- year 6

Web page: <https://www.ofcom.org.uk/research-and-data/media-literacy-research/childrens/childrens-media-lives>

Source: UK Office of Communications

Accessibility for researchers: Open

Name of the database in its original language: -

Other relevant information: -

Description

The OFCOM is the regulator for the communications services in the UK.

Ofcom (annual or semi-annual)Children and Parents: Media Use and Attitudes

Children's Media Lives

Most relevant ICT information

https://www.ofcom.org.uk/_data/assets/pdf_file/0021/190524/cml-year-6-findings.pdf

Children are under-reporting how much they use social media, and how much they care about their online representations Children are downplaying the amount of sexualised content they see and share on social media.

Some of the girls in the sample are open about how they receive unsolicited explicit photos from boys, and some have seen instances of nude imagery passed around at school. However, many are not reporting the extent to which they see other forms of sexualised content or share this themselves. For example, screen recording of an image gallery on a smartphone revealed how one girl was sharing sexualised images of herself in a swimsuit on social media, and another showed how imagery of lingerie, vibrators and adverts for 'penis enlargement cream' had been saved and perhaps shared with friends. In another example, social media tracking of a young male showed how he was re-sharing sexualised imagery posted by female users and posting interactive quizzes on Instagram in which he revealed that his favourite website was Pornhub.

Children are under-reporting how much they use social media, and how much they care about their online representations

Children report being concerned about some markers of online popularity, such as the amount of 'likes' received for posts or their 'follower-to-following ratio'. However, some children also say that it is not 'cool' to be seen to care too much about their online image, and some downplayed the extent of their social media use in interviews. For example, one child reported that he hardly ever used Instagram, but in fact he regularly created Instagram stories, and social media tracking showed that he often posted content that emulated what he had seen others post.

Identification of at-risk groups

Immigrant children: yes

Poor children: yes

Large families (3+ children):

Low educated parents: yes

Children with disabilities: yes

Urban / rural: yes

Other (please specify):

Strengths

- A research project which follows 18 children, aged 8-15 at the beginning of the study, over consecutive years, interviewing them on camera each year about their media habits and attitudes. The study provides evidence about the motivations and the context of media use, and how media are part of daily life and domestic circumstances. It also provides rich detail on how media habits and attitudes change over time, particularly in relation to children's emotional and cognitive development. It shows how children feel about the different risks associated with using the Internet and things that may concern them. Children were asked broadly about what they like to watch, and do online, and asking if they have ever felt uncomfortable or experienced negative instances.
- In this example of Year 6 children report: https://www.ofcom.org.uk/_data/assets/pdf_file/0021/190524/cml-year-6-findings.pdf

It was investigating online identity and how children seek attention and perceive influencers online. The project provides rich details of how children's media habits and attitudes change over time, particularly in the context of their emotional and cognitive development.

Weaknesses

- At risk groups are not at the centre of project

3.3.8.3 Next Steps

Database: Next Steps (previously the Longitudinal Study of Young People in England (LSYPE1))

Acronym: Next Steps

Coverage: England

Time period: (2004-2010) (as of June 2020)

Type of data and population target: 16,000 people born in 1989-90 in England

Web page: <https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000030>

And <https://cls.ucl.ac.uk/cls-studies/next-steps/>

Source:

Accessibility for researchers: Yes survey data may be downloaded as SPSS, Stata or tab-delimited files.

Name of the database in its original language:

Other relevant information:

Description

The study began in 2004 and included young people in Year 9 who attended state and independent schools in England. Following the initial survey at age 13-14, the cohort members were interviewed every year until 2010. The survey data have also been linked to the National Pupil Database (NPD) records, including cohort members' individual scores at Key Stage 2, 3 and 4. In 2013 the management of Next Steps was transferred to the Centre for Longitudinal Studies (CLS) at the UCL Institute of Education and in 2015 Next Steps was restarted, under the management of CLS, to find out how the lives of the cohort members had turned out at age 25. It maintained the strong focus on education, but the content was broadened to become a more multi-disciplinary research resource.

There are now two separate studies that began under the LSYPE programme. The second study, Our Future (also known as LSYPE2), began in 2013 and will track a sample of over 13,000 young people from the age of 13/14 annually through to the age of 20 (seven waves). <https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000110>

Interviewees are young people who were aged 13/14 years old at the first wave and their parents or carers. Interviews are conducted annually. Next Steps (formerly LSYPE1) interviewed the young people over seven waves (2004-2010) with a wave 8 interview in 2015 at age 25.

Most relevant ICT information

Identifies, and enables analysis and understanding of, the key factors affecting young people's progress in transition from the later years of compulsory education, through any subsequent education or training, to entry into the labour market or other outcomes. Data from the study are used, among other things, to monitor the progress of the cohort group, evaluate the success or otherwise of policy aimed at this group and provide an evidence base for further policy development.

Findings have shown that poverty and disadvantage can affect educational achievement. Pupils from disadvantaged backgrounds did less well in school than their more advantaged peers, and were also more likely not to be in education, employment or training by age 17. However, Next Steps has also shown that this is partly due to the fact that disadvantaged young people are less likely to believe in their own ability and have lower aspirations for their futures.

Identification of at-risk groups

Immigrant children: -
 Poor children: -
 Large families (3+ children): -
 Low educated parents: -
 Children with disabilities: -
 Urban / rural: -
 Other (please specify): -

Strengths

- Interesting findings:

The lower educational attainment of young people from disadvantaged backgrounds can partly be explained by their parents' education levels, their school and neighbourhood peer groups, and aspirations.

Young people from disadvantaged backgrounds were five times less likely to go to university than their more advantaged peers – even if they had shown similar ability early in their education.

Bullying: Fifteen-year-olds with statements of special educational needs were significantly more likely to be frequent victims of threats or acts of physical violence and theft, even when other factors that increase the risk of bullying were taken into account. They were also more likely to be excluded by a group of schoolmates or called names – a form of victimisation that is often referred to as 'relational bullying'.

Family: 19-year-olds who regularly look after an ill, disabled or elderly person are less likely to be in education, employment or training than those without such caring responsibilities.

Teenage pregnancy: Rates for teenage pregnancy and teenage motherhood were higher in areas with greater levels of deprivation. Young women from less well-off backgrounds were more likely to have been pregnant and, in particular, more likely to have become mothers by the age of 18 than those from more affluent backgrounds.

Weaknesses

- Not sure what it has on ICT here.

Potential improvements

The ICT problem as per above.

3.3.8.4 Avon Longitudinal Study of Parents and Children**Database: Avon Longitudinal Study of Parents and Children**

Acronym: ALSPAC

Coverage: Avon, UK. Children of the 90s is a group of around 14 500 children born in the Avon area in 1991 and 1992.

Time period: 1991- 2012 (as of June 2020)

Type of data and population target: Children of the 1990s

Web page: <http://www.bristol.ac.uk/alspac/>

Source:

Accessibility for researchers:

Name of the database in its original language:

Other relevant information:

Description
This is how it was described: “Their mothers agreed to take part in Children of the 90s during pregnancy and since then their children (now in their early 20s) have answered thousands of questions, donated biological samples including baby teeth, nail clippings and blood, and attended many Focus visits so we can chart their health and wellbeing in incredible detail.”
Most relevant ICT information
I don't think there is much here readily visible and if it is its outdated to be sure.
Identification of at-risk groups
Immigrant children: - Poor children: - Large families (3+ children): - Low educated parents: - Children with disabilities: - Urban / rural: - Other (please specify): -
Strengths
A lot of focus on cardiovascular research discoveries - Just 15 minutes of vigorous exercise a day can reduce your obesity risk by half - Smoking increases our resting heart rate which in turn can increase our risk of heart disease - Children from disadvantaged backgrounds are more at risk of obesity and heart disease - Reducing our alcohol intake, even as a light or moderate drinker, can still be beneficial for our hearts - For men, heart health may be linked to changes in the quality of relationships They also now have the project Children of the Children of the 90s (COCO90s) There is this paper, which means they were looking at disadvantaged groups: - Children from disadvantaged backgrounds are more at risk of obesity and heart disease
Weaknesses
- Not ICT relevant from what can be observed.
Potential improvements
They now have a Covid-19 questionnaire see here: http://www.bristol.ac.uk/alspac/participants/questionnaires/covid19/

3.3.8.5 Life in Likes

Database: Children's Commissioner Life in Likes
Acronym: Life in Likes Coverage: UK Time period: 4th January 2018 (as of June 2020) Type of data and population target: 32 children aged 8-12 across the UK Web page: https://www.childrenscommissioner.gov.uk/publication/life-in-likes/ Source: Accessibility for researchers: Access request but findings are here: https://www.childrenscommissioner.gov.uk/wp-content/uploads/2018/01/Childrens-Commissioner-for-England-Life-in-Likes-3.pdf Name of the database in its original language: Other relevant information:
Description
This Children's Commissioner's report on the effects of social media on 8-to-12-year-olds examines the way children use social media and its effects on their wellbeing. 'Life in Likes' fills a gap in research showing how younger children use platforms which social media companies say are not designed for them. Whilst most social media sites have an official age limit of 13 years, some research has suggested $\frac{3}{4}$ of 10-to-12 year olds have a social media account.

Most relevant ICT information

"While 8-10s use social media in a playful, creative way – often to play games – this changes significantly as children's social circles expand as they grow older. This report shows that many Year 7 children are finding social media hard to manage and becoming over-dependent on 'likes' and 'comments' for social validation. They are also adapting their offline behaviour to fit an online image, and becoming increasingly anxious about 'keeping up appearances' as they get older.

Most social media platforms have a minimum age limit of 13, but research shows a growing number of children aged under 13 are using social media, with 3 in 4 children aged 10-12 having their own accounts. While much is known about how teenagers use social media, this research provides the missing piece to the story, exploring the social media lives of children before they reach the teenage years. In October and November 2017, we conducted 8 focus groups with 32 children aged 8-12 to understand the impact of social media on the wellbeing of this age group."

This research shows that children learn a considerable amount from their peers and older siblings. A peer-to-peer element in digital literacy education would provide children with a more accessible and relevant way to learn about life online.

This research shows that under 13s are regularly using social media platforms designed for older children and it is time that social media companies recognise this.

This research shows that children who take part in hobbies, sports or other activities are less reliant on social media

Year 6 and Year 7 are crucial ages at which to prioritise lessons around digital literacy and online resilience as this is the age at which social media can begin to dominate day-to-day life. Lessons around online safety learned at younger ages are insufficient to prepare children for the 'cliff edge' around the time of transition to secondary school.

This research demonstrates that digital citizenship from a very early age is critical in order to prepare children effectively for their lives online.

For example, this research shows that while children are aware of the message to 'be themselves', when online they often adapt their behaviour in order to gain social approval. ■ Digital literacy should aim to develop children's critical awareness of the imagery presented on social media – by friends, celebrities, brands and others – to enable them to differentiate between curated, often digitally altered images and people's real lives.

On the one hand, social media was perceived as having a positive effect on children's wellbeing, and enabled them to do the things they wanted to do, like staying in touch with friends and keeping entertained. On the other, it had a negative influence when it made them worry about things they had little control over. For younger children this was more related to their families' use of social media, whereas for older children this was more strongly linked to peers and friendships. The transition from primary to secondary school saw a significant change in the way children used social media and brought with it new concerns. At this age, children were introduced to wider networks of friends and started to follow more celebrities and people they did not know in their offline lives. This meant they were more aware of their own identity, started comparing themselves to a broader group of people and worried about whether they fitted in. This introduced an additional layer of worries, relating to what people would think of them, what they looked like, and who they should be.

Identification of at-risk groups

Immigrant children: -

Poor children: -

Large families (3+ children): -

Low educated parents: -

Children with disabilities: -

Urban / rural:

Other (please specify): Ethnicity: 24 White British, 4 Asian Pakistani, 1 Asian British, 3 Mixed/Multiple Ethnicity ■ Religion: 13 No religion, 12 Christian, 6 Muslim, 1 Jewish ■ Socioeconomic spread: Mixture of respondents from ABC1C2DE backgrounds

Strengths

- Very rich in imagery and narratives

Weaknesses

- No focus on at risk groups

Potential improvements

Focus on at risk groups

3.3.8.6 Roehampton Annual Computing Education report

Database: Roehampton Annual Computing Education report

Acronym:

Coverage: England

Time period: (as of June 2020)

Type of data and population target: Uptake of computing/computer science qualifications at GCSE in England from the 2018 exam sittings.

Web page: <https://www.bcs.org/more/bcs-academy-of-computing/the-roehampton-annual-computing-education-report/>

Source:

Accessibility for researchers:

Name of the database in its original language:

Other relevant information:

Description

This report brings together government data on computing provision in English schools, including the school performance tables for exams taken in 2018 and the school workforce census up to 2017.

It distinguishes between computing, the broad subject described by the national curriculum, and computer science, ICT and other specific qualifications under that umbrella. It specifically looks at schools offering GCSE computer science and other computing qualifications at Key Stage 4 (KS4).

The key findings are that:

- The number of hours of computing/ICT taught in secondary school dropped by 35.8% from 2012 to 2017. Across the country, KS4 saw 31,000 fewer hours taught per week, a 47% decrease.
- In Key Stage 3 (KS3), the time given for computing dropped from an hour in 2012 to just over 45 minutes in 2017, despite the marked increase in the demands of the national curriculum at this level.
- The overall number of qualifications taken by students at Year 11 decreased by 144,000, or 45%, between 2017 and 2018.
- The percentage of students sitting GCSE computer science increased marginally from 12.1% in 2017 to 12.4% of all GCSE students in 2018.
- Whilst overall numbers of GCSE computer science providers were up, 8.2% of schools that offered the subject in 2017 were not offering it in 2018. In this group, one in five (19%) girls' comprehensive schools who offered GCSE computer science in 2017 dropped it in 2018.
- With GCSE computer science student numbers levelling out and the removal of GCSE ICT in 2018, a further decline in the total numbers of hours of computing taught and qualifications taken seems highly likely for 2019.

This report can be read in conjunction with the [full report on the 2017 exam sittings](#).

Most relevant ICT information

<https://www.bcs.org/media/2520/tracer-2018.pdf>

Identification of at-risk groups

Immigrant children: -

Poor children: -

Large families (3+ children): -

Low educated parents: -

Children with disabilities: -

Urban / rural: -

Other (please specify): -

Strengths

- It finds a decline: With GCSE computer science student numbers levelling out and the removal of GCSE ICT in 2018, a further decline in the total numbers of hours of computing taught and qualifications taken seems highly likely for 2019.

Weaknesses

- This is not focusing on at risk groups

Potential improvements

Focusing on at risk groups

3.3.8.7 Becta Harnessing Technology in Schools

Database: Becta Harnessing Technology in Schools

Acronym:

Coverage: England

Time period: 2009-2010 (as of June 2020)

Type of data and population target:

Web page: <https://dera.ioe.ac.uk/1544/>

Source:

Accessibility for researchers:

Name of the database in its original language:

Other relevant information:

Description

Harnessing Technology schools survey 2010: The national survey of schools measuring the use of technology for learning, teaching and management.

The Harnessing Technology schools survey (HTSS) report presents the key survey findings from the academic year 2009-10 referencing the five system outcomes against which impact of the strategy was measured. The survey covers primary, secondary and special schools in England with questionnaires for senior managers/headteachers, ICT Co-ordinators and teachers. The survey findings were published as National Statistics in accordance with the requirements of the NSO. The HTSS was an annual national survey of ICT in primary, secondary and special schools.

Report: http://dera.ioe.ac.uk/1544/1/becta_2010_htss_report.pdf

The survey captured measures in five broad areas: 1. Improved personalised learning experiences. 2. Confident system leadership and innovation. 3. Technology confident effective providers. 4. Engaged and empowered learners. 5. Enabling infrastructure and processes.

Most relevant ICT information

This is what they looked at:

Number of computers

Access to equipment

Assistive technology

Network access

ICT systems & equipment management.

Management Information Systems

Learning Platforms

Leadership & Management

ICT Strategy

Environmental sustainability strategy

Leadership priorities

ICT budget

Electronic monitoring systems

Communication

Teaching & Learning

Creativity & problem solving

Assessment

Pupils own devices

Digital learning resources

Homework

Curriculum related software

Internet based tools

Esafety

Staff confidence & competence

Teacher enthusiasm

Perceived teacher competence and training

Staff development priorities

Parents & extended learning

Reporting to parents

Access at home

Benefits

Savingtime

Supporting pupils learning needs

Identification of at-risk groups

Immigrant children: -
 Poor children: -
 Large families (3+ children): -
 Low educated parents: -
 Children with disabilities: -
 Urban / rural: -
 Other (please specify): -
 N/A

Strengths

- This is about how teachers do with ICT but from 2010.

Weaknesses

- Not as much about children but relevant to overall ICT in Education
 - Outdated

3.3.8.8 The Office for Standards in Education, Children's Services and Skills (Ofsted) ICT in Schools

Database: The Office for Standards in Education, Children's Services and Skills (Ofsted) ICT in Schools

Acronym: Ofsted

Coverage: UK

Time period: 2008-2011 (as of June 2020)

Type of data and population target:

Web page: : <https://www.gov.uk/government/publications/ict-in-schools-2008-to-2011>

Source:

Accessibility for researchers: <https://webarchive.nationalarchives.gov.uk/20141107031708/http://www.ofsted.gov.uk/resources/ict-schools-2008-11>

Name of the database in its original language:

Other relevant information:

Publications by Ofsted. The importance of ICT: information and communication technology in primary and secondary schools, 2005/2008 (070035), Ofsted, 2009; www.ofsted.gov.uk/resources/070035. The safe use of new technologies (090231), Ofsted, 2010; www.ofsted.gov.uk/resources/090231. Other publications National Curriculum for ICT at Key Stages 1 and 2; <http://curriculum.qcda.gov.uk/key-stages-1-and-2/subjects/ict>. National Curriculum for ICT at Key Stage 3; <http://curriculum.qcda.gov.uk/keystages-3-and-4/subjects/key-stage-3/ict> National Curriculum for ICT at Key Stage 4; <http://curriculum.qcda.gov.uk/keystages-3-and-4/subjects/key-stage-4/ict> Websites National Association of Advisors for Computers in Education (NAACE); www.naace.co.uk. Computing at School; www.computingatschool.org.uk. e-skillsuk; www.e-skills.com Open University Vital project; www.vital.ac.uk BigAmbition; www.bigambition.co.uk. UK Safer Internet Centre; www.saferinternet.org.uk. Child Exploitation and Online Protection Centre (CEOP) ThinkUknow; www.thinkuknow.co.uk

Description

Since the Education Reform Act of 1988, information and communication technology has been compulsory for all pupils from 5 to 16 in maintained schools. This report draws on evidence from the inspection of information and communication technology in primary, secondary and special schools between 2008 and 2011. The use of ICT is considered as both a specialist subject and across the wider school curriculum.

Part A reports on the quality of the provision of ICT in primary and secondary schools and its impact on achievement and standards. Part B explores seven issues arising from the survey evidence which focus on: the impact of the use of assessment on pupils' achievements and future success; the curriculum and qualifications in Key Stage 4; professional development of staff; e-safety; use of virtual learning environments; availability of ICT resources; and securing best value.

Most relevant ICT information

The teaching of ICT was good or outstanding in nearly two thirds of the primary schools visited, with many teachers and teaching assistants increasingly confident and able to support pupils effectively. There were weaknesses in the teaching of more demanding topics such as data handling or control, but in many of the schools this gap had been identified and was being addressed. The position was less positive for ICT in secondary schools, with just under half of the schools in the survey judged good or outstanding. The proportion of secondary schools in the survey in which teaching was judged to be good or outstanding was no better than that in the previous survey.³ Weaknesses included limited teacher capability in key topics such as programming; students repeating work from previous years; and lack of attention to the needs and interests of more able students.

Many of the primary and secondary schools visited were not tracking the progress of pupils effectively in both specialist ICT classes and across the curriculum. This led to teachers and pupils lacking an understanding of current performance and what was needed to improve. Pupils with special needs and/or disabilities were well supported in the ICT lessons observed and were able to make good use of ICT adaptations in school and at home. In most cases this enabled them to achieve in line with their school peers.

The survey reinforced concerns raised in the last ICT report about the curriculum and the qualification routes experienced by many students in Key Stage 4. These often failed to meet the needs of students. In these schools, those students who had not chosen an examination course in ICT did not follow the National Curriculum programme of study. Where vocational courses were chosen, the modules selected by the school narrowed the learning and limited the achievement of the students. Important topics such as control technology or data handling were not given sufficient attention or were missed out completely. In 30 of the 74 secondary schools visited, nearly half the students reached the age of 16 without an adequate foundation for further study or training in ICT and related subjects. There were few examples of schools engaging with local IT businesses to bring relevance and context to classroom studies. Nationally, the numbers of students entering for GCSE and A level in ICT subjects has continued to fall since 2007. The number of students entering for vocational awards in ICT subjects has increased considerably over the same period. Despite better performance in examinations than boys, fewer girls chose to continue to study ICT in Key Stage 4 and beyond.

Identification of at-risk groups

Immigrant children: -
 Poor children: -
 Large families (3+ children): -
 Low educated parents: -
 Children with disabilities: -
 Urban / rural: -
 Other (please specify): Three special schools were included.

Strengths

- Great detail on primary, secondary and special schools on ICT use in the UK

Weaknesses

- Outdated
 - Not much information about at-risk groups

Potential improvements

Update and focus on at risk groups.

3.3.8.9 Teacher Workload Survey

Database: Teacher Workload Survey

Acronym:

Coverage: England

Time period: 2016- 2019 (as of June 2020)

Type of data and population target: 7,287 teachers, middle leaders and senior leaders from 404 schools

Web page: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/855933/teacher_workload_survey_2019_main_report_amended.pdf

Source:

Accessibility for researchers:

Name of the database in its original language:

Other relevant information:

Matt Walker, Jack Worth and Jens Van den Brande: National Foundation for Educational Research

Description

This report presents the findings from the Teacher Workload Survey (TWS) 2019, which is a large-scale nationally representative survey of teachers, middle leaders and senior leaders, conducted over a three-week period in March 2019. The survey helps act as a national ‘barometer’ for teachers’, middle leaders’ and senior leaders’ working conditions and forms a key part of the Department for Education’s (DfE) commitment to improving the evidence base on what drives unnecessary teacher workload and what works to reduce it.

An online survey was administered in a sample of primary, secondary and special schools across England. A probability proportionate to size (PPS) method was used to randomly select schools, with the probability of selection into the sample proportionate to the number of teachers in the school¹. In total, 1,203 schools were selected and approached. Of these schools, 449 agreed to take part in the survey and distributed the survey link to all teaching staff, representing a total of 20 704 teachers, middle leaders and senior leaders. After removing responses from non-teaching staff and further data cleaning, the final sample comprised 7 287 teachers, middle leaders and senior leaders from 404 schools. This represented a 35 per cent response rate at the teacher/leader level among schools that agreed to participate. Overall, the majority of characteristics (including demographic and school characteristics) for teachers, middle leaders and senior leaders responding to the survey were similar to the average for the overall population of teaching staff, as described by the School Workforce Census (SWC). To address any differences, the data have been weighted to reflect the national population of teachers from the SWC.

Most relevant ICT information

Most respondents agreed they had the Information and Communication Technology (ICT) skills needed to perform data recording and analysis tasks, that their schools supported continuing professional development (CPD), and that they had time during their contracted working hours to take part in professional development activities.

However, they disagreed that they had enough time to keep informed of changes to guidance and rules affecting professional practice.

About seven out of ten respondents reported they ‘tend to agree’ or ‘strongly agree’ with the statements, ‘I have the necessary Information and Communication Technology (ICT) skills to perform data recording and analysis tasks’ (76 per cent), and ‘the school supports continuing professional development for teachers’ (71 per cent). About half (51 per cent) reported they ‘tend to agree’ or ‘strongly agree’ with the statement, ‘the resources available at my school to help plan teaching and learning are high quality’. Despite this, a notable minority reported they ‘tend to disagree’ or ‘strongly disagree’ with the statements: ‘I have enough time to keep informed on changes to guidance and rules affecting professional practice’ (47 per cent); and ‘I have time during my contracted working hours to take part in professional development activities’ (39 per cent).

Identification of at-risk groups

Immigrant children: -

Poor children: -

Large families (3+ children): -

Low educated parents: -

Children with disabilities: -

Urban / rural: -

Other (please specify): -

N/A

Strengths

- Gives a picture of teacher and workload that is very comprehensive.

Weaknesses

- Not enough about children, little about ICT.

3.3.8.10 Understanding Society**Database: Understanding Society**

Acronym:

Coverage: UK

Time period: 1991 (British Household Panel Survey) – 2019 (as of June 2020)

Type of data and population target: Survey data. 40000 households

Web page: <https://www.understandingsociety.ac.uk/>

Source: University of Essex

Accessibility for researchers: Register with the UK Data Service

Name of the database in its original language: -

Other relevant information: -

Description

Understanding Society collects a wide range of information such as income, wealth, savings, finances, spending, health, wellbeing, education, work, training, family, partnerships, origins, nationality, ethnic identity, childcare, caring responsibilities, transport, environmental behaviour, political attitudes, life satisfaction, community and leisure. This can be used to point changes in people's lives and attitudes over time.

Most relevant ICT information

Information related to ICT access: computer and Internet access. Regarding to children, indicators about time use, social networks and gaming. See list of indicators on ICT in Table A.22. of the Appendix.

Identification of at-risk groups

Immigrant children: Yes

Poor children: Yes

Large families (3+ children): Yes

Low educated parents: Yes

Children with disabilities: No

Urban / rural: Yes

Other (please specify):

Strengths

- It is a very large longitudinal database with a long tradition in the UK and with a complete set of socio-economic and demographic characteristics

Weaknesses

-

3.4 Concluding remarks

There has been a growing interest, nationally and internationally, in the study of ICT on children and youth and such is reflected by the large number of databases that previous sections have presented. Naturally, the outbreak of the COVID-19 pandemic will make the availability of data on ICT indicators even more relevant than ever, for the whole population, but in particular, for children. In what follows, we provide a list of remarks that intend to highlight the weaknesses of the current existing data as well as give recommendations that could improve future empirical analysis on ICT.

- **Availability of indicators.** There are a given number of indicators that are available in multiple databases (e.g. access to the Internet in the household, number of computers in a classroom). However, it is often the case that databases that collect a wide array of ICT indicators lack the relevant socio-economic and demographic variables that would allow

a complete analysis of at-risks groups (e.g. EU Kids online II). On the other hand, those databases that contain most of the necessary information to identify at-risk groups (e.g. the EU-SILC) enquire about few ICT indicators, so the analysis that one can perform in that respect is relatively limited. In the first case, improvement may be more challenging to achieve because often the surveys are answered by children themselves so it is unlikely that they can answer with detail about the socio-economic status of their households or the educational level of their parents. Thus, one possible way forward would be to include more ICT indicators in those databases that are particularly designed to identify at-risk groups in multiple domains (e.g. EU-SILC, Understanding Society).

- **Type of indicators.** Most reviewed databases collect objective indicators of ICT (e.g. whether a child has access to a computer or not or whether an adolescent spends time gaming or not). Data on subjective indicators of ICT is much scarcer. This means that, with the current data, we can deepen our understanding of the social reality of ICT that children live, but a better comprehension of children's subjective states in relation to ICT (such as their preferences or perceptions) will be limited. Again, while the objective indicators of ICT are useful to describe the reality, they tend to ignore children's opinions and attributes and may even be described as 'paternalistic'. Subjective measures can gather information on children's perceptions that is very relevant to understand the benefits and harms of ICT. Research on the impact on new technology on children and youth would benefit from a more extensive availability of subjective measures in current databases.
- **Lack of information on certain at-risk groups.** Few of the reviewed international databases enquire about the situation of children with disabilities. As assistive technology is developing, the ability to help individuals with many types of disabilities is increasing. This accessible technology has aided children with disabilities to benefit from technology, allowing them access and participation, for example, in schools (Copley and Ziviani, 2004). One of the highest achievements lies in the area of social and emotional development, as children are able to control their environment and acquire more independence (Hutinger et al., 1996). Not having data of this is an important drawback because it implies that the potential benefits of new technologies on disabled children cannot be studied in Europe in a comparative cross-country fashion.
- **Missing topics.** There are a number of topics that are not well covered in current databases. For example, we cannot study parents' preparedness to help children with their computer skills; we are unable to analyse parents' permissiveness regarding the use of technology and if such differ by gender; it is not possible to study trends in the prevalence of cyberbullying, and more data on children's overall wellbeing is needed. There is little data on younger children, for example, preschool age, but also the first years of school. More information on rural and urban divides would help to better understand also groups at-risk due to geographical location, but this could also be compared across countries. Finally, data on those socially excluded would be helpful, but it might be difficult to also access such groups of children and young people. This is not an exhaustive list, but these are some of the issues we find lacking in the literature and databases covered.
- **Large heterogeneity in the number of existing databases at the national level.** There exists a considerable heterogeneity across Europe in the number of existing databases on ICT at the national level (beyond the requests from Eurostat which are sometimes mandatory). In contrast, certain countries gather vast amounts of data (as, for example, the United Kingdom), while others (as Spain or Greece) collected somewhat limited amounts of data. Such heterogeneity often reflects data collection traditions but, in given contexts, there is certainly room for improvement.
- **Open access.** Not all databases on ICT are open access. While obtaining data access from Eurostat, for example, for the use of the CSIS database or the EU-SILC, is relatively easy. Still, some other databases such as the HBSC have an embargo of three years during which only the national teams can use the data. Given that change concerning ICT occurs at a fast pace, by the time data is available to other researchers, it is often outdated. Furthermore, one can find multiple studies on the digital society. Still, it is often the case that the raw data is not made available to other researchers (e.g. World Internet Project). Thus, we would encourage open access in all data sources once reports have been published.

A. Appendix

Table A.1. List on indicators on ICT in the 2nd Survey of Schools: ICT in education

Relevant variables Teacher (ISCET 1-3)		
Topic	Code	Label
Demographic		Gender, ISCED level, teacher subject, age, experience in teaching, computer use in leisure time, computer use for personal/professional development
Extent and reasons of ICT use for teaching	TE04Q01	ICT is taught as a separate subject
	TE04Q02	ICT is integrated in my subject because I choose to do so
	TE04Q03	ICT is integrated in my subject because of curriculum requirements
	TE05Q01-05	Purpose of using ICT: Preparing lessons, Creating/modifying digital content (eg video file, audio file, text file, PowerPoint presentation), Class teaching in front of/with the students, Provide personal feedback and support to students, Provide personal feedback and support to students
	TE06Q01	Years of computer/Internet use at school
	TE07Q01	Computer/Internet use in class in the past 12 months
	TE30Q01	Percentage of usage ICT by students in class in the past 12 months
ICT availability in school	TE09Q01-09	Availability of: Desktop computer without and with Internet access, Non-Internet-connected and Internet-connected laptop or, tablet PC, netbook or mini notebook computer, Internet-connected laptop, tablet PC, netbook or mini or notebook computer, Mobile phone provided by the school, E-reader (a device to read books and newspapers on screen), Interactive whiteboard, Digital camera or camcorder, Computer laboratory
	TE10Q01-02	School provided [to]: laptop or notebook, tablet
	TE11Q01-02	[to]: teacher, student
ICT training and support for teacher	TE13Q01	Participation in ICT training on digital technologies compulsory for a teacher in their subject
	TE14Q01-11	Professional development in: Introductory courses on Internet use and general applications (basic word-processing, spreadsheet, presentations, databases, etc), Advanced courses on applications (advanced word-processing, complex relational databases, Virtual Learning Environment, etc), Internet use (creating websites/webpages, video conferencing, etc), Equipment-specific training (interactive whiteboard, laptop, etc), Courses on the pedagogical use of ICT in teaching and learning, Subject-specific training on learning applications (tutorials, simulations, etc), Course on multimedia (using digital video, audio equipment, etc), Participate in online communities (eg mailing lists, twitter, blogs) for professional discussions with other teachers, ICT training provided by school staff, Participate in teacher networks for collaboration and projects (eg eTwinning), Personal learning about ICT in your own time, Other professional development opportunities related to ICT
	TE15Q01	Time investment in professional development
	TE16Q01-5	Support from: more experienced teacher/knowledgeable teacher, Team teaching/in-school collaboration with other teachers, School ICT/technology coordinator, Other school staff, Experts from outside the school, An online helpdesk, community or website

teacher's ICT use for school related work	TE18Q01-2	Browse/search the Internet to: collect information to prepare lessons, collect learning material or resources to be used by students during lessons
	TE18Q10	Download/upload/browse material from the school's website or a virtual learning environment / learning platform
	TE18Q12	Communicate with students by email
	TE18Q13	Communicate with students using mobile applications on a smartphone or a tablet (eg WhatsApp, Telegram)
	TE18Q14	Use online tools/platforms on a computer (eg Showbie) to communicate with students
	TE18Q06	Post home work for students on the school website, a learning platform or a cloud storage service (eg Dropbox, Google Drive)
	TE18Q03	Use applications to prepare presentations for lessons
	TE18Q04	Create your own digital learning materials for students (eg prepare digital labs exercises, record your own lectures for students to refer to later)
	TE18Q05	Prepare standard exercises and tasks for students (eg use Word to prepare exercises and print the document to then distribute to students)
	TE19Q01-04	Use of: Material that you've researched online, Existing online material from established educational sources, Educational applications on a smartphone or a tablet, Material that is available on the school's computer network or database, Electronic offline material (eg DVD)
	TE18Q07	Frequency of using ICT to provide feedback and/or assess students' learning
	TE31Q01	When you do use ICT to provide feedback and/or assess student's learning, do you do it via the school website or a learning platform?
	TE18Q09	Frequency of using Emails to contact students' parents
	TE32Q01	Frequency of using Mobile applications on a smartphone or tablet (eg WhatsApp, Telegram) to contact students' parents
	TE32Q02	Frequency of using Online tools/platforms on a computer (e Showbie) to contact parents to contact students' parents
general teaching method	TE21Q01	I present, demonstrate and explain to the whole class
	TE21Q02	I support and explain things to individual students
	TE21Q04-09	Students: work in groups, on exercises or tasks individually, on project, give presentations to the whole class, process and analyse data, participate in assessing their work, take tests and assessments, are engaged in inquiry-based activities, discuss ideas with other students and the teacher
Use of ICT affected by	TE20Q01-20	No Use of ICT affected by: Insufficient number of computers, Internet-connected computers, tablets provided by the school, bandwidth or speed, interactive whiteboards, laptops/notebooks, school computers out of date and/or needing repair, lack of adequate skill of teachers, insufficient technical support to teachers, pedagogical support of teachers, lack of adequate content/material for teaching, content in national language, too difficult to integrate ICT use into the curriculum, lack of pedagogical models on how to use ICT for learning, school time organisation, school space organisation, pressure to prepare students for exams and tests, most parents not in favour of the use of ICT at school, most teachers not in favour of the use of ICT at school, using ICT in teaching and learning not being a goal in our school, lack of interest of teachers, no or unclear benefit to use ICT for teaching
	TE22Q08	Save and store a file on a hard drive/cloud platform (how often)

Teacher's ICT skills	TE22Q, TE33Q	Teacher able to: Download or upload curriculum resources from/to websites or learning platforms for students to use, Email a file to someone, another student or teacher, Participate in a discussion forum on the Internet, Participate in social networks, Produce a text using a word processing programme, Capture and edit digital photos, movies or other graphics, Edit text online containing Internet links and images, Create a database, Edit a questionnaire online, Use a spreadsheet programme, Use a spreadsheet to plot a graph, Create a presentation with simple animation functions, Create and maintain blogs or websites, Prepare materials to use with an interactive whiteboard/with the school equipment (eg interactive whiteboard, beamers etc), Code/programme apps, Use the Internet safely to protect your privacy and online reputation programmes and/or robots, Recognise fake news (intentional spread of false information), Download and install software on a computer, Use ICT to conduct experiments (collecting data and/or images, storing them, documenting observation, etc), Teach students how to behave safely online (eg prevent cyberbullying), to protect their privacy, to manage their digital identity and reputation, how to behave ethically online, assist students in benefiting from the opportunities offered by ICT and the Internet 8eg learning, communication, entertainment, creativity, self expression and civic participation)
Effect of ICT use one students	TE23Q01-07	ICT has positive impact on: Students concentrate more on their learning, Students try harder in what they are learning, Students feel more autonomous in their learning (they can repeat exercises if needed, explore in more detail topics that they are interested in, etc, Students understand more easily what they learn, Students remember more easily what they've learnt, ICT facilitates collaborative work between students, ICT improves the class climate (students are more engaged, less disturbing)
	TE24Q01-11	ICT should be used for students to: do exercises and practise, retrieve information, work in a collaborative way, learn in an autonomous way, learn to use them to solve problems, motivate them, because positive effect on students' achievement, on student's higher order thinking skills (critical thinking, analysis, problem solving), competences in transversal skills (learning to learn, social competences etc), essential to prepare students to live and work in the 21st century

Relevant Variables Parent (child ISCT 1-3)		
Topic	Code	Label
Demographic	child school	grade, number of children, age, education level
Household's Internet access	PA03Q011-17	What [type of Internet connection] do you have at home? [type of Internet connection]: ADSL, Cable, Fibre optic, WLAN, Satellite, none, don't know/ Prefer not to say
Parent's ICT access and use	PA04Q01-08	Which of the following [devices] do you and your child have access to at home? [devices]: Computer (e.g. desktop, laptop, or notebook), computer, mobile phone, smartphone, E-reader (a device to read books and newspapers on screen), video gaming system (e.g Xbox, PlayStation, Wii), Handheld games console (PSP, Nintendo DS), wearable devices (e.g. smartwatch)
	PA05Q01-19	Frequency of: Reading and watching the news online at home, Searching online for practical information (e.g. seats at a match/concert, shopping, train times, health), Searching different sources online for information and learning about a particular topic you're interested in, Watching video clips, downloading music, games, software from the Internet, Searching online for job opportunities, Sending and reading emails, Participating in social networks and use most of their features (e.g. Facebook, Instagram, Twitter, Snapchat, Ask.fm, etc.), Chatting online, Using online banking and government services, Doing online shopping, Using a word processing, spreadsheet or presentation programme (e.g. Word, Excel, PowerPoint),

		Maintaining your own website or blog, Checking your privacy settings (e.g. on a social networking site) Coding/programming apps, programmes and/or robots, Update the operating system and applications of your computer, tablet or smartphone, Learning with educational software, games, apps and quizzes
Parental mediation and support	PA24Q02	Parents are able to recognise fake news (intentional spread of false information)
	PA07Q01	When your child is online, do you know what s/he is doing (e.g. school work, playing games, browsing the Internet)
	PA08Q01-06	Frequency of doing: Talk to your child about what s/he does with ICT or the Internet, Stay nearby when your child uses ICT or the Internet, Sit with your child while s/he uses ICT or the Internet, Do activities together with ICT or the Internet (e.g. play games, watch online videos, use social networks), Assist your child in benefiting from the opportunities offered by ICT and the Internet (e.g. learning, communication, entertainment, creativity, self-expression and civic participation), Encourage your child to explore and learn things on the Internet
	PA09Q01-03	Frequency of getting support: From You, from his/her brother(s) or sister(s) - in doing homework which requires the use of ICT, other relatives
	PA06Q01-03	Parent able to: Teach your child how to behave safely online (e.g. prevent cyberbullying), Parent able to: Teach your child how to behave safely to protect his/her privacy, Teach your child how to manage their digital identity and reputation
Discussing about ICT	PA13Q01-05	Frequency of discussing about: Cyberbullying, Privacy-related risks (e.g. identity theft), Online reputation risks (e.g. posting a personal photo on a public blog, sexting), Fake news (intentional spread of false information), Risks of being exposed to inappropriate content online, Health issues caused by technology overuse (e.g. insomnia, back pain, computer addiction)
Parental control	PA15Q01-06	Are there Rule of using Internet, computer, smartphone, tablet, handheld games console (e.g. PSP, Nintendo DS), video gaming system
Digital communication in family and with school	PA10Q01-06	Frequency of communicating with child using: Phone call, SMS, E-Mail, instant messaging (e.g. WhatsApp, Viber, Telegram, Google Hangouts, Facebook messenger, etc.), Internet audio call, Video call (e.g. Skype, FaceTime)
	PA11Q01-03	Frequency of communicating with child's teacher using: Phone call, SMS, E-Mail
Child's digital skills	PA12Q01-05	Child able to: Use the Internet safely to protect him/herself against cyberstalking, Use the Internet safely to protect his/her privacy, Use the Internet safely to protect his/her online reputation, Use the Internet safely to protect his/her health against the risks of technology overuse (e.g. insomnia, back pain, computer addiction), Take measures to protect the environment when using ICT (e.g. avoid printing, turn off your computer)
Negative experiences	PA17Q01-06	Experience of: Cyberbullying in relation to child's use of ICT and Internet, of Privacy-related issues (e.g. identity theft) in relation to child's use of ICT and Internet, Experience of Online reputation risks (e.g. posting a personal photo on a public blog, sexting) in relation to child's use of ICT and Internet, child came across inappropriate online content in relation to child's use of ICT and Internet, Health issues caused by technology overuse (e.g. insomnia, back pain, computer addiction) in relation to child's use of ICT and Internet, Your child made a purchase using your credit/debit card without your permission in relation to child's use of ICT and Internet

Effect of ICT use in school	PA19Q01-08	Using ICT in school has positive impact on: My child understands more easily what s/he learns, remembers what s/he has learnt more easily, concentrates better, is more motivated to learn, can learn at his/her own pace, students collaborate better, students and teachers communicate better, learning to use ICT and Internet will later help my child finding a job in the labour market
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Relevant Variables Student (child ISCED 2-3)		
Topic	Code	Label
Demographic		Grade, mother tongue, gender, birthday, born in the same country as your present school is in, years of living in the country where the school is in, who live with most of the time, mother education level, father education level, clos
Child's Internet access	ST02Q01	Have you been on the Internet outside school (i.e. at home, at friends' or family member's home, in a public library, an Internet café, etc.) in the last 3 months?
Child's ICT access and use outside school	ST01Q01,03,04	Have you used the following [devices] outside school (i.e. at home, at friends' or family member's home, in a public library, an Internet café, etc.) in the last 3 months? [devices]: A computer or laptop/notebook, A tablet, A smartphone
	ST03Q01-16	Which of the [following] are available for you to use at home, or outside school (e.g. at friends' or family member's home, in a public library or an Internet café)? [following]: Computer (e.g. desktop, laptop, or notebook) without Internet access, Computer (e.g. desktop, laptop, or notebook) with Internet access, Digital reader (portable device for reading books on screen), Video gaming system (e.g. Xbox, PlayStation, Wii), Handheld games console (e.g. PSP, Nintendo DS), Mobile phone or smartphone without Internet access, Smartphone with Internet access, Tablet without Internet access, Tablet with Internet access, Camcorder or digital camera (to record video), Wearable devices (e.g. smartwatch)
	ST05Q01-03, 05-07, 12-13, 16,18, 22, 24, 25, 30	How often do you take part in the following [activities] in your free time, at home or any place other than school? [free time activities]: watching the news online, Searching online for practical information (e.g. seats at a match/concert, shopping, train times, health), Searching different sources online for information and learning about a particular topic you're interested in, Watching video clips, downloading music, games, software from the Internet, Searching online about job opportunities, Sending and reading emails, Participating in social networks (e.g. Facebook, Instagram, Twitter, Snapchat, Ask.fm, etc.), Chatting online (e.g. WhatsApp, Viber, Google Hangouts, Facebook messenger, Skype messenger, etc.), Using a word processor, spreadsheet or presentation programme (e.g. Word, Excel, PowerPoint), Maintaining your own website, blog ,Coding/programming apps, programmes and/or robots, Checking your privacy settings (e.g. on a social networking site), Updating the operating system and applications of your computer, tablet or smartphone, Learning with educational software, games, apps and quizzes
	ST06Q01, 02, 04, 05-07, 09, 18-20, 25-27, 29	How often do you do the following school-related activities at home or locations other than schools? [school-related activities at home]: Search the Internet for information for schoolwork, Check school announcements and download, upload or browse learning material on your school's website, Email other students about schoolwork, Use other online tools on a computer (e.g. Viber, Google Hangouts, Facebook, Skype, etc.) to contact other students about schoolwork, Use mobile applications on a smartphone or a tablet (WhatsApp, Viber, Telegram, Google Hangouts, Facebook messenger, etc.) to contact other students about schoolwork, Email teachers, Use other online tools on a computer (e.g. Viber, Google Hangouts,

		Facebook, Skype, etc.) to contact teachers about schoolwork, Use mobile applications on a smartphone or a tablet (WhatsApp, Viber, Telegram, Google Hangouts, Facebook messenger, etc.) to contact teachers about schoolwork, Use a word processing, spreadsheet or presentation programme (e.g. Word, Excel, PowerPoint), Code/programme apps, programmes and/or robots as part of school projects, Do homework on the computer, Work with other students on trying to solve a problem using ICT, Use computers, smartphones or tablets to conduct experiments (collecting data and/or images, storing them, documenting observation, etc.), Learning with educational software, games, apps and quizzes, Participate in online learning programmes
ICT use at school	ST34Q01-12	For which subjects is ICT used at school?
	ST08Q01	Have you used a desktop computer, a laptop or notebook at school in the last 3 months?
	ST33Q01-04	How often do you use the following [devices] at school for learning? [devices]: A computer or laptop/notebook, A tablet, A smartphone, Internet
	ST11Q09-11	How often do you use the [following] for learning purpose during lessons? [following]: Your own laptop or notebook brought from home, Your own tablet brought from home, Your own mobile phone or smartphone brought from home
	ST12Q01-10	How often do you use the [following] in lessons? [following]: Digital books and textbooks in lessons, Exercise software, online quizzes and tests, Learning applications on a smartphone or a tablet, Text edition tools (e.g. Word), Image edition tools (e.g. Photoshop, GIMP), Multimedia production tools (e.g. PowerPoint, video editing, digital recording), Broadcasting tools (publish podcast, upload to a video-sharing platform, etc.), Data logging tools (e.g. temperature rise), Computer simulations (interactive programme simulating real world phenomena in which you can make changes and see the consequences), Digital learning games, computer/video games
	ST13Q01-04, 06-07, 10, 14, 19-21	How often do you do the following [learning activities] during lessons? [learning activities]: Search the Internet to collect information, Download/upload/ browse material from your school's website, Send or read email messages, Chat online for school work, Use a word processing, spreadsheet or presentation programme (e.g. Word, Excel, PowerPoint), Code/programming apps, programmes and/or robots, Use computers to conduct experiments (collecting data and/or images, storing them, documenting observation, etc.), Use smartphones or tablets to conduct experiments (collecting data and/or images, storing them, documenting observation, etc.) during lessons, Use computers when working in groups, Participate in online training programmes, Learning with educational software, games, apps and quizzes
	ST14Q01-11	In lessons, how often are you engaged in the following (whether using ICT or not)? Different activities
	ST16Q01-07	Do you consider using ICT (computers, tablets, smartphones) during lessons has a positive impact on the [following]? [following]: You concentrate more on what you're learning, You try harder in what you are learning, You feel more independent in your learning, You understand more easily what you're learning, You remember more easily what you've learnt, ICT enables you to work better with other students on tasks, ICT improves the atmosphere in class (students are more engaged, there is less disruption)
	ST35Q01-04	Thinking about the use of ICT in your school: to what extent do you agree with the following [statements]? [statements]: My school encourages me to use my digital skills in a variety of learning activities, My school promotes responsible online behaviours (e.g. safety, privacy...), My school encourages me to use ICT to

		learn by doing instead of just listening to lectures, My school expects me to use learning technologies for collaborating with other students and teachers
Language used online	ST27Q01-04	Which language(s) do you usually use when going online? (yes/no) Language used at school, your mother tongue, English, other (specify)
Online media use	ST29Q01-09	[Where] do you get your news from? (yes/no) [Where]: Getting news from: Social networks (e.g. Facebook, Twitter), Free newspapers, Paid daily newspapers/periodicals, Digital newspapers, Video-sharing platforms (e.g. YouTube, Dailymotion), Television, Wikipedia, Radio, Your friends and family, Other
	ST30Q01-06	How do you know the information you read is reliable? (yes/no) I trust the news sources, I double check with another source, I trust my intuition, I ask my parents, I ask my teachers, Other
ICT skills	ST15Q01, 02, 06-08, 10, 13-15, 17-18, 23, 26-27, 31-35, 37-39, 43	How confident are you doing the following [tasks]? [tasks]: File electronic documents in computer folders and sub-folders, Identify online sources of reliable information, Check if the information that I find online is true, Find websites advertising jobs on offer, Email a file to someone/another student or teacher, Use other online tools on a computer (e.g. Viber, Google Hangouts, Facebook, Skype, etc.) to contact someone, Use mobile applications on a smartphone or a tablet (WhatsApp, Viber, Telegram, Google Hangouts, Facebook messenger, etc.) to contact someone, Participate in social networks and use most of their features (e.g. Facebook, Instagram, Twitter, Snapchat, Ask.fm, etc.), Use information found on the Internet without plagiarising (e.g. copy/paste in homework), Interacting with other people online in a respectful and polite manner, Create blogs or websites and maintain them, Produce text using a word processing programme (e.g. Word), Use spreadsheet programmes (e.g. Excel), Create a presentation (e.g. PowerPoint), Edit digital photographs or other graphic images, or videos, Code/programme apps, programmes and/or robots Change your privacy settings (e.g. on a social networking site), Run a virus scan on your computer to detect malware, Use the Internet safely to protect yourself against bullying, Use ICT safely to protect your health against the risks of technologies overuse (e.g. insomnia, back pain, computer addiction), Update the operating system and applications of your computer, tablet or smartphone, Learning with educational software, games, apps and quizzes, Participate in online training programmes
ICT use and studying	ST17Q01-08	Thinking about your experience with computers: to what extent do you agree with the following [statements]? [statements]: It is really important for me to work with a computer for learning, Using a computer for learning is really fun, I use a computer for learning because I'm very interested in computers, I lose track of time when I'm learning with the computer, It's really worth using a computer because it will help me in the future, I use a computer to learn as it will help me in the work that I want to do later on, I learn things using computers that will help me to get a job, Learning with computer is important for me because I need it for what I want to study later on
Support in ICT use of relatives	ST36Q01-03	How often do you... Discuss the risks of Internet with your parents, Get support from your parents when doing homework, which require the use of ICT, Get support from your brother(s) or sister(s) when doing homework, which require the use of ICT (if applicable)

Table A.2. List on indicators on ICT in the Community Statistics on Information Society (CSIS)

Relevant variables households		
Topic	Code	Label
Demographics	Income, number of children under 16, number of members in the household, degree of urbanization,	
Access to ICT	IACC	Yes, No, Don't know, No answer
	BBFIX	a) Fixed broadband connections, e.g. DSL, ADSL, VDSL, cable, optical fibre, satellite, public WiFi connections
	BBMOB	b) Mobile broadband connections (via mobile phone network, at least 3G, e.g. UMTS, using (SIM) card or USB key, mobile phone or smart phone as modem)
	DIALUP1	c) Dial-up access over normal telephone line or ISDN
	MPHNAR1	d) Mobile narrow band connection (via mobile phone network less than 3G, e.g. 2G+/GPRS, using (SIM) card or USB key, mobile phone or smart phone as modem)
	XELSE	a) Have access to Internet elsewhere
	XNEED	b) Don't need Internet (because not useful, not interesting, etc.)
	XEQU	c) Equipment costs too high
	XACC	d) Access costs too high (telephone, DSL subscription, etc.)
	XSKL	e) Lack of skills
	XSEC	f) Privacy or security concerns
	XBBNA	g) Broadband Internet is not available in our area
XOTH	h) Other	

Relevant variables households		
Topic	Code	Label
Demographics	Sex, country of birth, country if citizenship, educational level, employment situation,	
Internet use	IU	Within the last 3 months, Between 3 months and a year ago, More than 1 year ago, Never used it
	IFU	Every day or almost every day, At least once a week (but not every day), Less than once a week
	IUG_DKPC	a) Desktop computer
	IUG_LPC	b) Laptop or netbook
	IUG_TPC	c) Tablet computer
	IUG_MP	d) Mobile phone or smart phone
	IUG_OTH	e) Other mobile devices (e.g. media or games player, e-book reader, smart watch)
	IUG_TV	f) Smart TV (directly connected to the Internet, e.g. via WiFi, not via a separate device using it as a larger screen)
	IUTV_STV	a) Watching Internet streamed TV (live or catch-up)
	IUTV_OVC	b) Watching other video content (on demand or from sharing services)
	IUTV_WEB	c) Internet browsing through a browser app
	IUTV_APP	d) Using other apps (e.g. Skype, Facebook, games, online shopping)
	IUMP_MPH	a) Mobile phone (or smart phone)

	IUMC_MPH	b) Portable computer (e.g. laptop, tablet)
	IUMD_OTH	c) Other mobile devices (e.g. media or games player, e-book reader, smart watch)
	IUMBX	d) I didn't access the Internet via any mobile device away from home or work
	IUEM	a) Sending / receiving e-mails
	IUPH1	b) Telephoning over the Internet / video calls (via webcam) over the Internet (using applications, e.g. Skype or Facetime)
	IUSNET	c) Participating in social networks (creating user profile, posting messages or other contributions to Facebook, twitter, etc.)
	IUNW1	d) Reading online news/ newspapers / news magazines
	IUIF	e) Finding information about goods or services
	IUPDG	f) Playing or downloading games
	IUMUSS	g) Listening to music (e.g. web radio, music streaming)
	IUSTV	h) Watching Internet streamed TV (live or catch-up) from TV broadcasters
	IUVOD	i) Watching video on demand from commercial services (Netflix, HBO)
	IUVSS	j) Watching video content from sharing services (e.g. YouTube)
	IUUPL	k) Uploading self-created content (text, photos, music, videos, software, etc.) to any website to be shared
	IUCWEB	l) Creating websites or blogs
	IHIF	m) Seeking health-related information (e.g. injury, disease, nutrition, improving health, etc.)
	IUMAPP	n) Making an appointment with a practitioner via the website (e.g. of a hospital or a health care centre)
	IUHOLS	o) Using services related to travel or travel related accommodation
	IUSELL	p) Selling goods or services, e.g. via auctions (e.g. eBay)
	IUBK	q) Internet Banking
	IUPAYAC	r) Using payment accounts (e.g. PayPal) to pay for goods or services purchased over the Internet
	CC	Yes, No, No answer, Not applicable
	IUOLC	a) Doing an online course
	IUOLM	b) Using online learning material other than a complete online course (e.g. audio-visual materials, online learning software, electronic textbooks)
	IUOCIS	c) Communicating with instructors or students using educational websites/portals
	IUOOTH	d) Other
eGovernment	IGOV12IF	a) Obtaining information from web sites
	IGOV12FM	b) Downloading official forms
	IGOV12RT	c) Submitting completed forms
	IGOV12RTX_NAP	a) Did not have to submit official forms at all, neither online nor on paper
	IGOV12RTX_SNA	b) There was no such website service available
	IGOV12RTX_SKL	c) Lack of skills or knowledge (e.g. did not know how to use website or use was too complicated)
	IGOV12RTX_SEC	d) Concerns about protection and security of personal data
	IGOV12RTX_SIGN	e) Lack of or problems with electronic signature or electronic ID/certificate (required for authentication/using the service) (optional)
	IGOV12RTX_DEL	f) Another person did it on my behalf (e.g. consultant, tax adviser, relative or family member)
	IGOV12RTX_OTH	g) Other reason

eCommerce	IBUY	Within the last 3 months, Between 3 months and a year ago, More than 1 year ago, Never bought or ordered, No answer, Not applicable (IU=Blank or (IU<>1 and IU<>2 and IU<>3))
	BFOOD	a) Food or groceries
	BFURN	b) Household goods (e.g. furniture, toys, etc; excluding consumer electronics)
	BMED	c) Medicine
	BCLOT	d) Clothes, sports goods
	BHARD	e) Computer hardware
	BEEQU	f) Electronic equipment (incl. cameras)
	BTS	g) Telecommunication services (e.g. TV, broadband subscriptions, fixed line or mobile phone subscriptions, uploading money on prepaid phone cards, etc.)
	BHOLAC	h) Holiday accommodation (hotel etc.)
	BOTA	i) Other travel arrangements (transport tickets, car hire, etc.)
	BTICK	j) Tickets for events
	BFILM	k) Films, music
	BBOOKNL	l) Books, magazines, newspapers (including e-books)
	BELRN	m) e-learning material
	BSOFT	n) Video games software, other computer software and software upgrades
	BOTHTH	o) Other
	BFDOM	a) National sellers
	BFEU	b) Sellers from other EU countries
	BFWRLD	c) Sellers from the rest of the world
	BFUNK	d) Country of origin of sellers is not known
	BF	1-2 times, 3-5 times, 6-10 times, > 10 times, No answer, Not applicable (IBUY=Blank or IBUY<>1)
	IBV	less than 50 euro, 50 to less than 100 euro, 100 to less than 500 euro, 500 to less than 1000 euro, 1000 euro and more, don't know, No answer, Not applicable (IBUY=Blank or IBUY<>1)
	BTFW	a) Technical failure of the website during ordering or payment
	BDGL	b) Difficulties in finding information concerning guarantees and other legal rights
	BSPD	c) Speed of delivery slower than indicated
	BCPR	d) Final costs higher than indicated (e.g. higher delivery costs, unexpected transaction fee)
	BWDN	e) Wrong or damaged goods/services delivered
	BFRA	f) Problems with fraud encountered (e.g. no goods/services received at all, misuse of credit card details, etc.)
	BCR	g) Complaints and redress were difficult or no satisfactory response after complaint
	BDNS	h) Foreign retailer did not sell to my country
	BOTH	i) Others
	BARR1X	j) I have not encountered any problem
	BISR	a) Information from several retailer, producer or service provider websites
	BICAPP	b) Price or product comparison websites or apps
	BICR	c) Customer reviews on websites or blogs
	BADV	Yes, No, No answer, Not applicable (IBUY=Blank or (IBUY<>1 and IBUY<>2))
	BFIN_SH	a) Buying or selling shares, bonds, funds or other investment services

	BFIN_IN	b) Buying or renewing existing insurance policies, including those offered as a package together with another service (e.g. travel insurance offered together with a plane ticket)
	BFIN_CR	c) Taking a loan or arranging credit from banks or other financial providers
eSkills	CXFER	a) Transferring files between computers or other devices
	CINSAPP	b) Installing software or applications (apps)
	CCONF	c) Changing the settings of any software, including operational system or security programs
	CCPY	a) Copying or moving files or folders
	CWRD	b) Using word processing software
	CPRES1	c) Creating presentations or documents integrating text, pictures,
	CXLS / CXLSADV	d) Using spread sheet software / d1) If E2d is ticked (CXLS): Using advanced functions of spread sheet software to organise and analyse data, such as sorting, filtering, using formulas, creating charts
	CEPVA	e) Using software to edit photos, video or audio files
	CPRG1	f) Writing code in a programming language
Privacy and protection of personal identity	PIPER	a) Personal details (e.g. name, date of birth, identity card number)
	PICON	b) Contact details (e.g. home address, phone number, e-mail)
	PIPAY	c) Payment details (e.g. credit or debit card number, bank account number)
	PIOTH	d) Other personal information (e.g. photos of you, current location, information related to health, employment, income)
	PIX	e) none, did not provide any personal information
	PIACPP	a) Read privacy policy statements before providing personal information
	PIACGEO	b) Restricted access to your geographical location
	PIACSN	c) Limited access to your profile or content on social networking sites
	PIACADV	d) Refused allowing the use of personal information for advertising purposes
	PIACSWEB	e) Checked that the website where you needed to provide personal information was secure (e.g. https sites, safety logo or certificate)
	PIACUD	f) Asked websites or search engines to access the information they hold about you to update or delete it
	TADV	Very concerned, somewhat concerned, Not concerned at all, Option not included or no answer, Not applicable (IU=Blank or (IU<>1 and IU<>2))
	PCOOK	Yes, No, No answer, Not applicable (IU=Blank or (IU<>1 and IU<>2))
	ATSW	Yes, No, No answer, Not applicable (IU=Blank or (IU<>1 and IU<>2))

Table A.3. List on indicators on ICT in the Health Behaviour in School-aged Children (HBSC)

Category	Code	Label
Demographics	Gender, Grade, Month of birth, year of birth, age, age category, country of birth, mother's country of birth, father's country of birth	
ICT use	tvwd	Watch tv/dvd/video, weekdays How many hours a day, in your free time, do you usually spend watching TV, videos (including YouTube or similar services),
	playgamewd	Play computer games, weekdays How many hours a day, in your free time, do you usually spend playing games on a computer, games console, tablet (like iPad), smartphone or other electronic device (not including moving or fitness games)?
Cyberbullying	cbullmess	Cyberbullied by messages How often have you been bullied in the following ways?: Someone sent mean instant messages, wall postings, emails and text messages, or created a website that made fun of me.
	cbullpict	Cyberbullied by pictures How often have you been bullied in the following ways? Someone took unflattering or inappropriate pictures of me without permission and posted them online.
Social context - Family and friends	motherhome1, fatherhome1, stepmohome1, grandmotherhome1, grandfahterhome1, fosterhome1, elsehome1, brothershome1, sistershome1	Relatives at main home. Tick relative that is living in the home where you live all or most of the time. How many sisters, brothers
	Talkfather, talkstepfa, talkmother, talkstepmo m78 m79 m80 m81 famhelp famsup, famtalk famdec	Talk to father, stepfather, mother stepfather Important things talked about Someone listens Ask questions Clarify misunderstanding Family tries to help Get emotional help Talk about problems Help make decisions
	Friendhelp Friendcounton Friendshare Friendtalk m95 m96	Friends try to help Can count on friends Friends to share joys with Can talk about problems with friends Meet friends outside school time before 8pm Meet friends outside school time after 8pm
ICT and communication	m90 m91 m92 m93	Talk to friends phone/Internet Using texting/sms Using email Using instant massaging

	m94	Other social media
Social inequality and status	Employfa m120a employnotfa (same for mother)	Father job Father occupation SES Father not job
	Fasfamcar Fasbedroom Fascomputers Fasbathroom Fasdishwash Fasholidays welloff	Family car Own bedroom No. of computers No. of bathrooms Dishwasher in home Family holiday Family well off

Table A.4. List on indicators on ICT in the EU Kids Online

Relevant Variables Parents		
Category	Code	Label
Demographics		Number and age of children in HH, gender of child, age, relationship to child, number of adults in HH, one or two parent family, education, education other parent, main language spoken at home, question regarding if YOUR CHILD belongs to a group that is discriminated
Problems and worries (ICT related)	QP213a-e, QP213oth, QP213none, QP213dk	Does your child have any of the following [Difficulties] [Difficulties]: physical disability, physical illness, mental health difficulty, behavioural difficulty, learning difficulty, other difficulty, none of these, don't know
	QP214d-e	Thinking about your child, which of these [things], if any, do you worry about a lot? [things]: Seeing inappropriate material on the Internet, being contacted by strangers on the Internet
Parent's Internet use	QP215	Do you personally use the Internet?
	QP216a-d	Do you use the Internet in any of these [Places]? [Places]: at home, at work or college, from your mobile phone, other
	QP217 QP218	How often do you use the Internet? How confident are you in using the Internet?
	QP300a-h	Which of these [Devices] do you use for the Internet these days? [Devices]: Own PC, laptop, shared PC, laptop, mobile phone, games console, TV, other
Child's Internet use	QP219a-i	In which of these [Places] does your child use the Internet these days? [Places]: different places
Parental mediation	QP220a-e	Which of the following things, if any, [do] you sometimes do with your child? [do]: Talk to him/her about what he/she does on the Internet, Sit with him/her while s/he uses the Internet, Stay nearby when s/he uses the Internet, Encourage your child to explore and learn things on the Internet on their own, Do shared activities together with your child on the Internet
	QP221a-f	Child is currently allowed to [do them] all of the time, only with permission/supervision, or never allowed. [do them]: Use instant messaging, Download music or films on the Internet, Watch video clips on YouTube, Have his/her own social networking profile, Give out personal information to others on the Internet, Upload photos, videos or music to share with others
	QP222a-f	Have you ever done any of these [things] with your child? [things]: Helped him/her when s/he found something difficult to do or find on the Internet, Explained why some websites are good or bad, Suggested ways to use the Internet safely, Suggested ways to behave towards other people on the Internet, Helped him/her in the past when something has bothered him/her on the Internet, In general, talked to them about what s/he would do if something on the Internet ever bothered him/her
	QP223a-d QP224a-d	Do you sometimes check any of the following [things] afterwards? [things]: Which websites s/he visited, The messages in his/her email or instant messaging account, His/her profile on a social networking or online community, Which friends or contacts s/he adds to their social networking profile/instant messaging service

	QP225 QP226	Do you (or your partner/other carer) make use of any of the [following] [following]. Parental controls or other means of blocking or filtering some types of website, keeping track of the websites they visit, A service or contract that limits the time your child spends on the Internet, Software to prevent spam or junk mail or viruses Do the things that you (or your partner/other carer) do relating to how your child uses the Internet help to make his/her Internet experience better, or not really? Speaking of things you (or your partner/other carer) do in relation to your child's Internet use, do you think you should do more, or not really?
	QP238a-k, QP238none QP239a-k, QP239none	In general [where] do you get information and advice on safety tools and safe use of the Internet from? And [where] would you like to get information and advice from in the future? Your child's school [where]: your child's school, Television, radio, newspapers or magazines,...
Child bothering	QP227 QP228 QP229 QP231 QP232 QP233 QP234	Do you (or your partner/other carer) do anything different these days because your child has been bothered by something on the Internet in the past, or not really? As far as you are aware, in the past year, has your child seen or experienced something on the Internet that has bothered them in some way? How often has your child seen or experienced something on the Internet that has bothered in the past 12 months? Thinking about that time, how upset do you think your child felt about it (if at all)? In the NEXT six months, how likely, if at all, do you think it is that your child will experience something on the Internet that will bother them? To what extent, if at all, do you feel you are able to help your child to deal with anything on the Internet that bothers them? To what extent, if at all, do you think your child is able to deal with things on the Internet that bother them?
Child's Internet behaviour	QP235a-g QP236a-	Child has done [this] in the past year [this]: meeting someone only know from Internet, Seen images on the Internet that are obviously sexual, Been treated in a hurtful or nasty way on the Internet by another child or teenager, Treated another child or teenager in a hurtful or nasty way on the Internet, Seen or been sent sexual messages (eg words, pictures or videos) on the Internet, Sent someone else sexual messages (eg words, picture or videos) on the Internet, Seen aggressive or violent images of people attacking or killing each other on the Internet Child has seen website where [item] is discussed or encouraged in PAST YEAR. [item]: People talking about ways of physically harming or hurting themselves, People talking about ways to be very thin, People posting hateful messages that attack certain groups or individuals, People talking about their experiences of taking drugs

Relevant Variables Child			
Category		Code	Label
Demographics			number and age of children in HH, gender of child, age, relationship to child, number of adults in HH, one or two parent family, education, education other parent, main language spoken at home, question regarding if YOUR CHILD belongs to a group that is discriminated
Child's ICT use	Places use	QC301a-h	In which of these [Places] do you use the Internet these days? [Places]: different places
	Devices use	QC300a-h	Which of these [Devices] do you use for the Internet these days? [Devices]: Own PC, laptop, shared PC, laptop, mobile phone, games console, TV, other
	Age use and time amount use	QC302	How old were you when you first used the Internet?
		QC303	How often do you use the Internet?
	QC304	About how long do you spend on the Internet on a normal school day?	
	QC305	About how long do you spend on the Internet on a normal non-school day (like weekends or school holidays)?	
Internet activities	Internet used for	QC306a-d	Please tell me if you have done [this] in the past month on the Internet.
		QC307a-d	[this]: Used the Internet for schoolwork, Watched video clips, Downloaded music or films, Read/ watched the news on the Internet, used the Internet for school work
		QC308a-f	[this]: Sent/received email, Visited a social networking profile (yours or somebody else's), Visited a chatroom, Used instant messaging, Played games with other people on the Internet, Spent time in a virtual world
		QC309a-f	
	Contact with people at different online places	QC310aA-fC	Contact with [People] knowing from [Internet] [People]: different "categories" [Internet]: email, chatroom, instant messaging, playing games, virtual world
	Done what and how often	QC311a-f QC312a-f	Please tell me if you have done [them] in the past month on the Internet: Please tell me how often you have done it in the past month. [them]: Used a webcam, Put (or posted) a message on a website, Written a blog or online diary, Put (or posted) photos, videos or music to share with others, Created a character, pet or avatar, Used file sharing sites
Social networks	What social netwo	QC313	Do you have your own profile on a social networking site that you currently use, or not?
		QC314	
		QC315a-bx	Do you have one profile, or more than one?

	rkts, privac y inform ation	QC316 QC317 QC318a-g, QC318none, QC318dk	Which social network profile do you use? If you use more than one, please name the one you use most often. Roughly how many people are you in contact with when using [social networking profile]? Is your profile set to private, or public or partially private? Which of the [bits of information] on this card does your profile include about you? [bits of information]: A photo that clearly shows your face, your last name, your address, your phone number, your school, your correct age, an age that is not your real age, none of these, don't know
ICT skills		QC319a-c QC320a-d QC321a-d	How true are [these] of you? [these]: I know more about the Internet than my parents, I know lots of things about using the Internet, There are lots of things on the Internet that are good for children my age Which of [these things] do you know how to do on the Internet? [these things]: compare different websites to decide if information is true, Change filter preferences, Bookmark a website, Block unwanted adverts or junk mail/spam, Delete the record of which sites you have visited, Change privacy setting on a social networking profile, Block messages from someone you don't want to hear from, Find information on how to use the Internet safely
Bothering		QC322 QC323	Do you think there are things on the Internet that people about your age will be bothered by in any way? What things on the Internet would bother people about your age? (open question?)
Online communication	What kind of	QC324a-h	Please tell me if you have done [them] in the last 12 MONTHS on the Internet? [them]: Sent/received email, Visited a social networking profile, Visited a chatroom, Used instant messaging, Made/received phone calls (eg Skype), Played games with other people on the Internet, Spent time in a virtual world, Put (or posted) a message on a website, i.e. on a message-board, or forum
Parental mediation	Know what child does	QC325 QC326 QC327	How much do you think your parent(s) knows about what you do on the Internet? Overall, would you like your parent(s) to take more or less interest in what you do on the Internet, or to stay about the same? Does your parents/do either of your parents sometimes... talk to you about what you do on the Internet?, sit with you while you use the Internet?, stay nearby when you use the Internet?, encourage you to explore and learn things on the Internet on your own?, do shared activities together with you on the Internet?
	What is allowed	QC327a-d	parents CURRENTLY allow them (the child) to do them all of the time, only with permission/supervision, or never allow... Use instant messaging, Download music or films on the Internet, Watch video clips on the Internet, Have your own social networking profile, Give out personal information to others on the Internet, Upload photos, videos or music to share with others
	help child out	QC329a-f	Has your parent/either of your parents ever done any of [these things] with you? [these things]: Helped you when something is difficult to do or find on the Internet, Explained why some websites are good or bad, Suggested ways to use the Internet

			safely, Suggested ways to behave towards other people online, Helped you in the past when something has bothered you on the Internet, In general, talked to you about what to do if something on the Internet bothered you
	check Internet use,	QC330a-d QC331a-d	Does your parent/either of your parents sometimes check any of the [following things] afterwards? [following things]: Which websites you visited, The messages in your email or instant messaging account, Your profile on a social networking or online community, Which friends or contacts you add to your social networking profile/instant messaging service Does your parent/do your parents make use of any of the following...? Parental controls or other means of blocking or filtering some types of website, keeping track of the websites you visit, service or contract that limits the time you spend on the Internet, Software to prevent spam or junk mail/viruses
	effect on child	QC332 QC333 QC334 QC335	Do the things that your parent does/parents do relating to how you use the Internet help to make your Internet experience better, or not really? Do the things that your parent does/parents do relating to how you use the Internet limit what you can do on the Internet, or not really? And do you even ignore what your parent(s) tell you when you use the Internet, or not really? Does your parent/do you parents do anything different these days because you have been bothered by something on the Internet in the past, or not really?
Mediation	By friends	QC336a-e QC337	Have your friends ever done any of [these things]? [these things]: Helped you when you found something difficult to do or find on the Internet, Explained why some websites are good or bad, Suggested ways to use the Internet safely, Suggested ways to behave towards other people on the Internet, Helped you in the past when something has bothered you on the Internet Have you ever suggested ways to use the Internet safely for your friends?
	by others	QC338a-h QC339a-h	Have any teachers at your school ever done any of [these things]? [these things]: Talked to you about what you do on the Internet, Helped you when you found something difficult to do or find on the Internet, Explained why some websites are good or bad, Suggested ways to use the Internet safely, Suggested ways to behave towards other people online, Made rules about what you can do on the Internet at school, Helped you in the past when something has bothered you on the Internet, In general, talked to you about what you would do if something on the Internet ever bothered you Have you EVER received advice about how to use the Internet safely from any of [these people or places]?

			[these people or places]: Youth or church or social worker, Librarian, Other relative, Someone whose job it is to give advice over the Internet, Websites, Television, radio, newspapers or magazines, Internet service provider, I haven't received any advice from any of these people or places
Individual characteristics	QC105a-h, QC106a-g, QC107a-b		How to deal with problems, illness and sickness, resilience, play alone or with friends, how to deal with rules, how easy to achieve goals, have a good friend, fight, happy or unhappy, others like me, nervous and easily lose confidence, lying and cheating, others pick on me, easily distracted, steal, get on better with adults than with people at my age, reaction in new situations, fears, risky behaviour,
Risky behaviour offline, offline support	Not relevant		
Negative experiences	Botherd Where /who Ways What happened Feel about it Reaction	QC110 QC111 QC112 QC113 QC114a-d QC115 QC116a-g QC117a-h QC118 QC119 QC120a-g QC123a-g QC124a-g QC121	In the past 12 months, have you seen or experienced something on the Internet that has bothered you in some way? If yes, how often? Has someone acted in this kind of hurtful or nasty way to you in the past 12 months? If yes, how often? At any time during the last 12 months, has this happened... In person or face to face?, By mobile phone calls, texts or image/video texts?, Some other way, Don't know At any time during the last 12 months, has this happened on the Internet? And in which [ways] has this happened to you in the last 12 months? On a social networking site, By instant messaging, in a chat room, by email, in a gaming website, some other way on the Internet, don't know And which of these [things] have happened in the last 12 months? Nasty or hurtful messages were sent to me, I was left out or excluded from a group or activity on the Internet, I was threatened on the Internet, Other nasty or hurtful things on the Internet, don't know, prefer not to say Thinking about the last time this happened to you, how upset were you about what happened (if at all)? How long did you feel like that for? Did you do any of these [things] afterwards? [things]: Hope the problem would go away by itself, Try to fix the problem, Feel a bit guilty about what went wrong, Try to get the other person to leave me alone, Try to get back at the other person, none of these, don't know Did you do any of these [things] afterwards? And which, if any, of the [things] you did helped you?

		QC122a-h	<p>[things]: I stopped using the Internet for a while, I deleted any messages from the other person, I changed my privacy/ contact settings, I blocked the person from contacting me, I reported the problem (e.g. clicked on a 'report abuse' button, contacted an Internet advisor, or "Internet Service Provider (ISP)"), none of these things, don't know</p> <p>Did you talk to anyone about what happened? Who did you talk to about it? My mother or father, my brother or sister, a friend, a teacher, someone whose job is to help children, another adult I trust, someone else, don't know</p>
Harming others: bullying (perpetrator)	Bullying others way	QC125 QC126 QC127a-e	<p>Have you acted in a way that might have felt hurtful or nasty to someone else in the PAST 12 MONTHS? How often have you acted in this kind of way in the past 12 months?</p> <p>In which of the following [ways] have you acted like this in the past 12 months...? [ways]: In person face to face, By mobile phone calls, texts or image/video texts, on the Internet, other ways, don't know</p>
Risky experiences Sexual content	sexual content where type of websites what	QC128 QC129 QC130a-f QC131 QC132a-h QC133a-g	<p>In the past year, you will have seen lots of different images... Sometimes these might be obviously sexual... Have you seen anything of this kind in the past 12 months? How often have you seen these things in the past 12 months?</p> <p>In which, if any, of these [places] have you seen these kinds of things in the past 12 months? [places]: In a magazine or book, On television, film or video/DVD, By text (SMS), images (MMS), or otherwise on my mobile phone, By Bluetooth, other, don't know</p> <p>Have you seen these kinds of things on any websites in the past 12 months? Which [types] of website have you seen things like this on in the last 12 months? [types]: On a social networking site (e.g. Facebook or Bebo), By images that pop up accidentally, On a video-hosting site (e.g. YouTube), On an adult/X-rated website, In a gaming website, On a peer to peer file-sharing website (e.g. limewire), Some other type of website, don't know</p> <p>Which, if any, of these [things] have you seen on a website in the last 12 months? [things]: Images or video of someone naked, Images or video of someone's "private parts", Images or video of people having sex, Images or video of movies that show sex in a violent way, something else, don't know, prefer not to say</p>
	Feel about it	QC134 QC135 QC136	<p>In the LAST 12 MONTHS have you seen any things like this that have bothered you in any way? For example, made you feel uncomfortable, upset, or feel that you shouldn't have seen them. Thinking about the last time you were bothered by something like this, how upset did you feel about it (if at all)? Thinking about this time, how long did you feel like that for?</p>
	Reaction	QC137a-g	Did you do any of these [things] afterwards?

		<p>QC140a-g what helped: QC141a-g</p> <p>QC138 QC139a-h</p>	<p>[things]: Hope the problem would go away by itself, try to fix the problem, feel a bit guilty about what went wrong, none of these things, don't know</p> <p>[things]: I stopped using the Internet for a while, I deleted any messages from the person who sent it to me, I changed my filter/ contact settings, I blocked the person who had sent it to me, I reported the problem (e.g. clicked on a 'report abuse' button, contact an Internet advisor or "Internet service provider" (ISP)), none of these, don't know</p> <p>Again, thinking about this time, did you talk to anybody about what happened? Who did you talk to about it? my mother or father, my brother or sister, a friend, a teacher, someone whose job it is to help children, another adult I trust, none of these, don't know</p>
	<p>sexual messages online</p> <p>what</p> <p>where</p> <p>bothered</p> <p>Reaction</p>	<p>QC167</p> <p>How often: QC168</p> <p>QC169a-h</p> <p>QC170a-h</p> <p>QC171</p> <p>QC172 How long: QC173</p> <p>QC174</p> <p>QC177a-g what helped: QC178a-g</p> <p>QC175 QC176a-h</p>	<p>In the PAST 12 MONTHS, have you seen or received sexual messages of any kind on the Internet? This could be words, videos or pictures</p> <p>How often have you seen or received sexual messages of any kind on the Internet in the PAST 12 months? This could be words, videos or pictures.</p> <p>In the PAST 12 MONTHS, have any of [these] happened to you on the Internet? [these]: I have been sent a sexual message on the Internet, I have seen a sexual message posted where other people could see it on the Internet, I have been asked to talk about sexual acts with someone on the Internet, I have been asked on the Internet for a photo or video showing my private parts, I have seen other people perform sexual acts, none of these things, don't know, prefer not to say</p> <p>Thinking about the times in the LAST 12 MONTHS that you have seen or received a sexual message on the Internet, how has this happened? On a social networking site, By instant messaging, In a chatroom, By email, In a gaming website, By 'pop up' (something appears by accident), Some other way on the Internet, don't know,</p> <p>And in the LAST 12 MONTHS has any sexual message that you have seen or received bothered you in any way? For example, made you feel uncomfortable, upset, or feel that you shouldn't have seen it? Thinking about the LAST TIME you were bothered by something like this, how upset did you feel about it (if at all)?</p> <p>Did you do any of these [things] afterwards? [things]: Hope the problem would go away by itself, try to fix the problem, feel a bit guilty about what went wrong, none of these things, don't know</p> <p>[things]: I stopped using the Internet for a while, I deleted any messages from the person who sent it to me, I changed my filter/ contact settings, I blocked the person who had sent it to me, I reported the problem (e.g. clicked on a 'report abuse' button,</p>

			<p>contact an Internet advisor or "Internet service provider" (ISP)", none of these, don't know</p> <p>Did you talk to anyone about what happened? Mother or father, brother or sister, a friend, a teacher, another adult I trust, someone who job it is to help children, someone else, don't know</p>
Harming others: send sexual messages	what	<p>QC179 How often: QC180</p> <p>QC181a-h</p>	<p>In the PAST 12 MONTHS, have you sent or posted a sexual message (example: words, pictures or video) of any kind on the Internet? This could be about you or someone else?</p> <p>In the PAST 12 MONTHS have you done any of [these things] on the Internet...? [these things]: I have sent someone a sexual message (e.g. words, pictures or video) on the Internet?, I have posted a sexual message (e.g. words, pictures or video) where other people could see it on the Internet, I have talked about sexual acts with someone on the Internet, I have asked someone on the Internet to send me a photo or video showing their private parts, I have sent someone a photo or video showing my private parts, none of these, don't know</p>
Risky experiences content	Sort of content	QC142a-e	<p>In the past 12 months, have you seen websites where people discuss...? Ways of physically harming or hurting themselves, Ways of committing suicide, Ways to be very thing (such as being anorexic or bulimic), Hate messages that attack certain groups or individuals, Talk about or share their experiences of taking drugs</p>
Risky experiences Abuse of personal privacy	Sort of personal privacy abuse	QC143a-d	<p>In the past 12 months, has any of the [following] happened to you on the Internet? [following]: Somebody used my personal information in a way I didn't like, The computer got a virus, I lost money by being cheated on the Internet (we mean real money, rather than money in a computer game), Somebody used my password to access my information or to pretend to be me</p>
Internet addiction	First signs	QC144a-e	<p>In the past 12 months, how often have these [things] happened to you? [things]: I have gone without eating or sleeping because of the Internet, I have felt bothered when I cannot be on the Internet, I have caught myself surfing when I'm not really interested, I have spent less time than I should with either family, friends or doing schoolwork because of the time I spent on the Internet, I have tried unsuccessfully to spend less time on the Internet</p>
Risk behaviour related to social web and meeting strangers	Contact to (strangers)	<p>QC145a-c QC146a-b</p> <p>QC147 QC148</p>	<p>Have you done any of the following things in the PAST 12 MONTHS? If yes how often have you done each of these things?</p> <p>Looked for new friends on the Internet, Sent personal information (e.g. my full name, address or phone number) to someone that I have never met face to face, Added people to my friends list or address book that I have never met face to face, Pretended to be a different kind of person on the Internet from what I really am, Sent a photo or video of myself to someone that I have never met face to face</p>

	type	QC149 QC150a-c, QC150dk	Can I just check, have you ever had contact on the Internet with someone you have not met face to face before? And have you ever gone on to meet anyone face to face that you first met on the Internet in this way? And how many new people have you met in this way in the last 12 months, if any?
	ways	QC151a-g	In the last 12 months, which of these types of people have you met face to face that you first met on the Internet? Someone who is a friend or family member of someone else I know in person face to face, Someone who had no connection with my life before I met them on the Internet, neither
	What, if at all, bothered you	QC159a-f	And thinking about any people you have gone on a meeting with in the last 12 months who you first met on the Internet, in what ways did you [first get in contact] with them? [first get in contact]: On a social networking site, By instant messaging, In a chat room, By email, In a gaming website, Some other way on the Internet, don't know
	Feeling about it	QC160 How long: QC161 QC162 QC163 QC164a-h	Face to face meetings with people that you first meet on the Internet may be fine or not fine. In the LAST 12 MONTHS have you gone to a meeting with someone you met in this way that bothered you? Still thinking about that time, which, if any of these [things] happened? [things]: The other person said hurtful things to me, The other person hurt me physically, The other person did something sexual to me, something else bad happened, don't know, prefer not to say
	Reaction	QC165a-g What helped: QC166a-g	How upset did you feel about what happened (if at all)?
	Description of stranger	QC152-158	Did you do any of these things afterwards? Again still thinking about this time, did you talk to anyone about what happened? Who did you talk to? My mother or father, my brother or sister, a friend, a teacher, someone whose job it is to help children, another adult I trust, someone else, don't know Again thinking about this time, did you do any of these [things]? [things]: I stopped using the Internet for a while, I deleted any messages from the other person, I changed my privacy/ contact settings, I blocked the person from contacting me, I reported the problem (e.g. clicked on a 'report abuse' button, contact an Internet advisor or "Internet service provider" (ISP)), none of these things, don't know Thinking about the last time you were bothered by meeting someone in this way, how old was the person you actually met, male or female, did you talk to anyone about where you were going, who, did you take somebody with, who,

Table A.5. List on indicators on ICT in the Program for International Student Assessment (PISA)

ICT Familiarity Questionnaire (answered by students)		
Topic	Code	Label
Student's ICT access at home	IC001Q01TA- IC001Q11TA	Are any of these [devices] available for you to use at home? [devices]: Desktop computer, Portable laptop, or notebook, <Tablet computer> (e.g. <iPad>, <BlackBerry PlayBook>), Internet connection, <Video games console>, e.g. <Sony PlayStation>, <Cell phone> (without Internet access), <Cell phone> (with Internet access), Portable music player (Mp3/Mp4 player, iPod or similar), Printer, USB (memory) stick, <ebook reader>, e.g. <Amazon Kindle> [answers]: yes, and I use it, yes, but I don't use it, no
	IC006Q01TA	During a typical weekday, for [how long] do you use the Internet outside of school? [how long]: no time, 1-30 minutes per day, 31-60 minutes per day, between 1 hour and 2 hours per day, between 2 hours and 4 hours per day, between 4 hours and 6 hours per day, more than 6 hours per day
Student's ICT use at home	IC007Q01TA	On a typical weekend day, for [how long] do you use the Internet outside of school?
	IC151Q01HA - IC151Q09HA	In a typical school week, [how much time] do you spend using digital devices outside of classroom lessons (regardless whether at home or in school) for the following [subjects]? [subjects]: <Test language lessons>, <Mathematics>, <Science>, <Foreign language>, <Social sciences>, Music, Sports, <Performing arts>, <Visual arts>
	IC008Q01 - IC008Q13	[How often] do you use digital devices for the following [activities] outside of school? [activities during free time]: Playing one-player games, Playing collaborative online games, Using email, <Chatting online> (e.g. <MSN®>), Participating in social networks (e.g. <Facebook>, <MySpace>), Playing online games via social networks (e.g. <Farmville®>, <The Sims Social>), Browsing the Internet for fun (such as watching videos, e.g. <YouTube™>), Reading, news on the Internet (e.g. current affairs), Obtaining practical information from the Internet (e.g. locations, dates of events), Downloading music, films, games or software from the Internet, Uploading your own created content for sharing (e.g. music, poetry, videos, computer programs), Downloading new apps on a mobile device,
	IC010Q01 - IC010Q12	[activities for school at home]: Browsing the Internet for schoolwork (e.g. for preparing an essay or presentation, Browsing the Internet to follow up lessons, e.g. for finding explanations, Using email for communication with other students about schoolwork, Using email for communication with teachers and submission of homework or other schoolwork, using social networks for communication with other students about schoolwork (e.g. <Facebook>, <MySpace>), Using social networks for communication with teachers (e.g. <Facebook>, <MySpace>), Downloading, uploading or browsing material from my school's website (e.g. timetable or course materials), Checking the school's website for announcements, e.g. absence of teachers, Doing homework on a computer, Doing homework on a mobile device, Using learning apps or learning websites on a computer, Using learning apps or learning websites on a mobile device
Student's ICT access at school	IC009Q01-11	Are any of these [devices] available for you to use at school? [devices]: Desktop computer, Portable laptop or notebook, <Tablet computer> (e.g. <iPad>, <BlackBerry PlayBook>), Internet connected school computers, Internet connection via wireless network, Storage space for school-related data, e.g. a folder for own documents, USB (memory) stick, <ebook reader>, e.g. <Amazon Kindle>, Data projector, e.g. for slide presentations, Interactive Whiteboard, e.g. <Smartboard>
	IC005Q01TA	During a typical weekday, for [how long] do you use the Internet at school? [how long]: no time, 1-30 minutes per day, 31-60 minutes per day, between 1 hour and 2 hours per day, between 2 hours and 4 hours per day, between 4 hours and 6 hours per day, more than 6 hours per day

	IC150Q01HA - IC150Q09HA	In a typical school week, [how much time] do you spend using digital devices during [classroom lessons]? [how much time]: no time, 1-30 minutes per day, 31-60 minutes per day, between 1 hour and 2 hours per day, between 2 hours and 4 hours per day, between 4 hours and 6 hours per day, more than 6 hours per day [classroom lessons]: <Test language lessons>, <Mathematics>, <Science>, <Foreign language>, <Social sciences>, Music, Sports, <Performing arts>, <Visual arts>
	IC002Q01HA IC004Q01HA	[How old] were you when you first used a digital device? [How old] were you when you first accessed the Internet? [How old]: 3 years old or younger, 4-6 years old, 7-9 years old, 10-12 years old, 13 years old or older, I have never used a digital device until today
	IC152Q01HA - IC152Q09HA	Within the last month, has a digital device been used for learning or teaching during lessons in the following [subjects]? [subjects]: <Test language lessons>, <Mathematics>, <Science>, <Foreign language>, <Social sciences>, Music, Sports, <Performing arts>, <Visual arts>
	IC011Q01 - IC011Q10	[How often] do you use digital devices for the following [activities] at of school? [activities]: <Chatting online> at school, using email at school, browsing the Internet for schoolwork, Downloading, uploading or browsing material form school's websites (e.g. <intranet>), Posting my work on the school's website, Playing simulations at school, Practicing and drilling, such as for foreign language learning or mathematics, Doing homework on a school computer, Using school computers for group work and communication with other students, Using learning apps or learning websites
Statements	IC013Q01NA - 05, IC013Q11NA - 13 IC014Q03NA - 04, 06, 08, 09 IC015Q02NA - 03, 05, 07, 09 IC016Q01NA, 02, 04-07	Thinking about your experience with digital media and digital devices: to what extent do you disagree or agree with the following [statements]? [statements]: I forget about time when I'm using digital devices, The Internet is a great resource for obtaining information I am interested in (e.g. news. Sports, dictionary), It is very useful to have social networks on the Internet, I am really excited discovering new digital devices or applications, I really feel bad if no Internet connection is possible, I like using digital devices [statements skills I]: I feel comfortable using digital devices that I am less familiar with, If my friends and relatives want to buy new digital devices or applications, I can give them advice, I feel comfortable using my digital devices at home, When I come across problems with digital devices, I think I can solve them, If my friends and relatives have a problem with digital devices, I can help them [statements skills II]: If a need new software, I install it by myself, I read information about digital devices to be independent, I use digital devices as I want to use them, if I have a problem with digital devices I start to solve it on my own, If I need a new application, I choose it by myself [statements exchange skills]: To learn something new about digital devices, I like to talk about them with my friends, I like to exchange solutions to problems with digital devices with others on the Internet, I like to meet friends to play computer and video games with tem, I like to share information about digital devise with my friends, I learn a lot about digital media by discussing with my friends and relatives
News	IC169Q01HA	Which of the following [statements] best describes how you read the news (e.g. politics, culture, sport, local news)? [statements]: I do not follow the news at all, I only watch or listen to the news (e.g. radio, television, podcasts), I read the news more often on digital devices (e.g. tablet, smartphone, computer), I read the news more often on paper (e.g. newspapers, magazines), I read the news equally often in paper format and on digital devices

Well-being questionnaire (answered by students)		
Social Media	WB160Q01HA	[How often] do you talk to your friends on the phone, send them text messages or have contact through social media? [How often]: Rarely or never, Every day, Several times a day
Financial literacy questionnaire (answered by students)		
Online Banking	FL161Q01HA - 03	Do you have any of the following [things]? [things]: An account with a <bank, building society, post office or credit union>, A payment card/debit card, A mobile app to access your account
	FL163Q01HA- 05	When using digital or electronic devices outside of the bank (e.g. at home or in shops), how confident would you feel about doing the following [things]? [things]: Transferring money, Keeping track of my balance, Paying with a debit card instead of using cash, Paying with a mobile device (e.g. mobile phone or tablet) instead of using cash, Ensuring the safety of sensitive information when making an electronic payment or using online banking
	FL168Q04H, 05	In the last 12 months, have you done the following [things]? [things] (among others): Bought something online (alone or with a family member), made a payment using a mobile phone

Relevant Variables Standard Student Questionnaire		
Topic	Code	Label
Demographic		Age, Grade, Gender, mother's education, father's education, socioeconomic status, father's occupational status, mother's occupational status, mother's country of birth, father's country of birth, how old where you when you arrived in country of test, language spoken at home
Student's ICT access	ST011Q04TA - 06	Which of the following are in your home? [following] (among others): A computer you can use for school work, Educational software, A link to the Internet How many of [these] are at your home? [these] (among other non ICT devices): TV, <Cell phones> with Internet access (e.g. smartphones), Computers (desktop computer, portable laptop or notebook), <Tablet computers> (e.g. <iPad®>, <BlackBerry® Playbook™>), E-book readers (e.g. <Kindle™, <Kobo>, <Bookeen>)
Digital skills	ST158Q01HA - 07	At school, have you ever been taught the following [things]? [things]: How to use keywords when using search engine such as <Google©>, <Yahoo©>, etc., How to decide whether to trust information from the Internet, How to compare different web pages and decide what information is more relevant for your school work, To understand the consequences of making information publicly available online on <Facebook©>, <Instagram©>, etc., How to use the short description below the links in the list of results of a search, How to detect whether the information is subjective or biased, How to detect phishing or spam mails
	ST166Q01HA- ST166Q05HA	In your opinion, [how appropriate] are the following [strategies] in reaction to this email? (<i>Scenario: student received a message his/her inbox from a well-known mobile phone operator telling him/her that he/she is</i>

		<p>one of the winners of a smartphone. The sender asks him/her to click on the link to fill out a form with his/her data so they can send you the smartphone)</p> <p>[strategies]: Answer the email and ask for more information about the smartphone, Check the sender's email address, Click on the link to fill out the form as soon as possible, Delete the email without clicking on the link, Check the website of the smartphone offer is mentioned</p>
Reading and ICT	ST168Q01HA	<p>Which of the following [statements] best describes how you read books (on any topic)?</p> <p>[statements]: I rarely or never read books, I read books more often in paper format, I read books more often on digital devices (e.g. e-reader, tablet, smartphone, computer), I read books equally often in paper format and on digital devices</p>
	ST176Q01IA - ST176Q07IA	<p>[How often] are you involved in the following [reading activities]?</p> <p>[reading activities]: Reading, emails, <Chat on line> (e.g. <Whatsapp®>, <Messenger®>), Reading online news, Searching information online to learn about a particular topic, Taking part in online group discussions or forums, Searching for practical information online (e.g. schedules, events, tips, recipes)</p>

Relevant Variables Parents		
Topic	Code	Label
Demographic		Household income, child' early childhood education, parent's expected educational level for child
Reading and ICT parent	A161Q01HA - 07	<p>[How often] are you involved in the following [reading activities]?</p> <p>[reading activities]: Reading, emails, <Chat on line> (e.g. <Whatsapp®>, <Messenger®>), Reading online news, Searching information online to learn about a particular topic, Taking part in online group discussions or forums, Searching for practical information online (e.g. schedules, events, tips, recipes)</p>
News parent	PA163Q01HA	<p>Which of the following [statements] best describes how you read the news (e.g. politics, culture, sport, local news)?</p> <p>[statements]: I do not follow the news at all, I only watch or listen to the news (e.g. radio, television, podcasts), I read the news more often on digital devices (e.g. tablet, smartphone, computer), I read the news more often on paper (e.g. newspapers, magazines), I read the news equally often in paper format and on digital devices</p>

Relevant Variables Teachers (separate for teacher <language of test>)		
Topic	Code	Label
Teacher's ICT skills	TC045Q05N	<p>Were any of the [topics] listed below included in your teacher education or training programme or other professional qualification and your professional development activities?</p> <p>[topics] (among others): ICT skills for teaching,</p>
ICT use in lessons	TC155Q05HA, 06 <language of test teacher> only	<p>How often do you teach the following [aspects] of reading comprehension in your lessons?</p> <p>[aspects] (among others): Assessing credibility of information available on the Internet, Searching and selecting relevant information on the Internet</p>
	TC166Q01HA-07	<p>In your lessons, have you ever taught any of the following [things]?</p> <p>[things]: How to use keywords when using a search engine such as <Google©>, <Yahoo©>, etc., How to decide whether to trust information from the Internet, How to compare different web pages and decide what</p>

		information is more relevant for the students' school work, To understand the consequences of making information publicly available online on <Facebook©>, <Instagram©>, etc., How to use the short description below the links in the list of results of a search, How to detect whether the information is subjective or biased, How to detect phishing or spam emails
TC169Q01HA-14 other teacher only		How often did you use the following [tools] in your teaching this school year? [tools]: Tutorial software or practice programmes, Digital learning games, Word-processors or presentation software (e.g. <Microsoft Word ®>, <Microsoft PowerPoint ®>), Spreadsheets (e.g. <Microsoft Excel ®>), Multimedia production tools (e.g. media capture and editing, web production), Concept mapping software (e.g. <Inspiration ®>, <Webspiration ®>), Data logging and monitor tools, Simulations and modelling software, Social media (e.g. <Facebook>, <Twitter>), Communication software (e.g. email, blogs), Computer-based information resources (e.g. websites, wikis, encyclopaedia), Interactive digital learning resources (e.g. learning objects), Graphing or drawing software, E-portfolios
TC167Q01HA <language of test teacher> only		Within the last month, have digital devices (such as a tablet, computer, smartphone, e-reader or interactive whiteboard) been used in your teaching of <test language lessons>? (yes/no)
TC168Q01HA - 12 <language of test teacher> only		During the last month, did you ask your <test language lessons> students to use digital devices for any of the following [purposes]? [purposes]: Searching for subject-related information online, Working on extended project (i.e. over several weeks), Working on short assignments (i.e. within a week), Working at their individual pace, Working on individualizes material, Planning sequences of learning activities for themselves, Submitting homework or classwork, Practicing or drilling, coordinating schoolwork with other students, Following up on missed lessons or material, Reading texts electronically instead of paper versions, Writing texts such as a blog or a wiki
TC184Q01HA		Does your school have a policy concerning the use of digital devices for teaching? (yes/no)
Reading and ICT teacher	TC172Q01HA	Which of the following [statements] best describes how you read books (on any topic)?
	TC173Q01HA	Which of the following [statements] best describes how you read the news (e.g. politics, culture, sport, local news)? [statements]: I rarely or never read books, I read books more often in paper format, I read books more often on digital devices (e.g. e-reader, tablet, smartphone, computer), I read books equally often in paper format and on digital devices
	TC176Q01HA-07	[How often] are you involved in the following [reading activities]? [reading activities]: Reading, emails, <Chat on line> (e.g. <Whatsapp®>, <Messenger®>), Reading online news, Searching information online to learn about a particular topic, Taking part in online group discussions or forums, Searching for practical information online (e.g. schedules, events, tips, recipes)

Relevant Variables School		
Topic	Code	Label
School's ICT access	SC155Q01HA-11	To what extent do you agree with the following [statements] about your school's capacity to enhance learning and teaching using digital devices? [statements]: The number of digital devices connected to the Internet is sufficient, The school's Internet bandwidth or speed is sufficient, The number of digital devices for instruction is sufficient, Digital devices at the school are sufficiently powerful in terms of computing capacity, The availability of adequate software is

		sufficient, Teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction, Teachers have sufficient time to prepare lessons integrating digital devices, Effective professional resources for teachers to learn how to use digital devices are available, An effective online learning support platform is available, Teachers are provided with incentives to integrate digital devices in their teaching, The school has sufficient qualified technical assistant staff
	SC156Q01HA - 08	Does your school have any of the [following]? [following]: Its own written statement about the use of digital devices, Its own written statement specifically about the use of digital devices for pedagogical purposes, A programme to use digital devices for teaching and learning in specific subjects, Regular discussions with teaching staff about the use of digital devices for pedagogical purposes, A specific programme to prepare students for responsible Internet behaviour, A specific policy about using social networks (<Facebook>, etc.) in teaching and learning, A specific programme to promote collaboration on the use of digital devices among teachers, Scheduled time for teachers to meet to share, evaluate or develop instructional material and approaches that employ digital devices

Table A.6. List on indicators on ICT in the TIMSS and PIRLS

Background information	
Code (PIRLS)	Label
ACBG03A	Students background/economic
ACBG05A	How many people live in the area
ACBG05B	Immediate area of school location
ASBH03A	Child born in (Country)
ASBH03B	Age of child when came to (Country)
ASBH13	Amount of books at home
ASBH16	Amount of digital information devices
ASBH17	How often does child speak language at home
ASBH18A + ASBH18B	Level of education father/mother
ASBH19	Level of education child
ASBH20A + ASBH20B	What kind of main job father/mother
ASBGDDH	Digital devices in the home
ASBGHRL	Home resources for learning
ASDHEDUP	Parents' highest education level
ASDHOCCP	Parent's highest occupation level
ASBHPCS	Parents perceptions of child school

Relevant Variables Students			
Topic	Code 4th Grade	Code 8th Grade	Label
ICT use for schoolwork	TIMSS G10 (ASBG10) PIRLS G09	TIMSS G13 (BSBG13)	How often do you use a computer or tablet in each of these [places] for schoolwork (including classroom tasks, homework, studying outside of class)? [places]: at school, at home, some other place
	PIRLS G10		How much [time] do you spend using a computer or tablet to do these [activities] for your schoolwork on a normal school day? [time]: No time, 30 minutes or less, More than 30 minutes [activities]: Finding and reading information, Preparing reports and presentations
		TIMSS G14	Do you use the Internet to do any of the following [tasks] for schoolwork (including classroom tasks, homework, studying outside of class)? [tasks]: Access the textbook or other course materials, Access assignments posted online by my teacher, Collaborate with classmates on assignments or projects, Communicate with the teacher, Find information, articles, or tutorials to aid in understanding mathematics, Find information, articles, or tutorials to aid in understanding science
ICT access	TIMSS G05 (ASBG05) PIRLS G05	TIMSS G06	Do you have any of these [things] at your home? [things]: A computer or tablet of your own, A computer or tablet that is shared with other people at home, Internet connection, your own mobile phone, A gaming system (e.g., Playstation)
		TIMSS G05	How many [digital information devices] are there in your home? Count computers, tablets, smartphones, smart TVs, and e-readers. (Do not count other devices.) [digital information devices]: None, 1-3 devices, 4-6 devices, 7-10 devices, More than 10 devices
ICT use	Not in TIMSS PIRLS G11		How much time do you spend each day using a computer or tablet for any of the following [activities]? [activities]: playing games, watching videos, chatting, surfing the Internet
	TIMSS G12 PIRLS G13	TIMSS G16	During this (school) year, how often have other students from your school done any of the following [things] to you (including through texting or the Internet)? [things]: Made fun of me or called me names, Left me out of their games or activities, Spread lies about me, Made me do things I didn't want to do, Shared embarrassing information about me, (Posted embarrassing things about me online (only 8 th Grade)), Threatened me

e-PIRLS students		
Topic	Code	Label
ICT use	Not in TIMSS PIRLS G01	About how much [time] do you spend using a computer each day? [time]: Less than 30 minutes, 30 minutes up to 1 hour, From 1 hour up to 2 hours, 2 hours or more
	Not in TIMSS PIRLS G02	About how much [time] do you spend each day finding and reading information on the Internet? [time]: Less than 30 minutes, 30 minutes up to 1 hour, From 1 hour up to 2 hours, 2 hours or more
ICT skills	Not in TIMSS PIRLS G03	How much do you agree with these [statements]? [statements]: I am good at using a computer, I am good at typing, It is easy for me to find information
	Not in TIMSS PIRLS G04	[Who] mainly taught you the following [things]? [Who]: I mainly taught myself, my teachers, my family, my friends, I have never learned this

		[things]: Using a computer, Typing, Finding information on the Internet
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Relevant Variables Parent(s) / Caregiver(s) - Home / Early Learning		
Topic	Code 4 th Grade	Label
ICT use	TIMSS G12 PIRLS G10	In a typical week, how much [time] do you spend reading <u>for yourself</u> at home, including books, magazines, newspapers, and materials for work (in print or digital media)? [time]: Less than an hour a week, 1-5 hours a week, 6-10 hours a week, More than 10 hours a week
ICT access	TIMSS G15 PIRLS G16	How many [digital information devices] are there in your home? Count computers, tablets, smartphones, smart TVs, and e-readers. (Do not count other devices.) [digital information devices]: None, 1-3 devices, 4-6 devices, 7-10 devices, More than 10 devices
	PIRLS G15A PIRLS G15B Not in TIMSS	Do you have a device that you use for reading ebooks (e.g., an e-reader, a tablet, a computer)? Do you have a device that your child can use for reading ebooks?
ICT importance	TIMSS G16	How much do you agree with these [statements] about mathematics and science? [statements]: Most occupations need skills in math, science, or technology; Science and technology can help solve the world's problems; Technology makes life easier

Relevant Variables Teachers			
Topic	Code 4 th Grade	Code 8 th Grade	Label
ICT access	TIMSS G08	TIMSS G08 (Mathematics & Science)	In your current school, how severe is each [problem]? [problem]: ... Teachers do not have adequate technological resources, Teachers do not have adequate support for using technology
	TIMSS M05 (Mathematics)	TIMSS M20 (Mathematics)	A. Do the students in this class have computers (including tablets) available to use during their mathematics lessons? If yes, B. What [access] do the students have to computers? [access]: Each student has a computer, The class has computers that students can share, The school has computers that the class can use sometimes C. How [often] do you have the students do the following [activities] on computers during mathematics lessons? [often]: Every or almost every day, Once or twice a week, Once or twice a month, Never or almost never [activities]: Explore mathematics principles and concepts, Practice skills and procedures, Look up ideas and information, (Process and analyse data (8 th Grade))
	TIMSS S04 (Science)	TIMSS S19 (Science)	A. Do the students in this class have computers (including tablets) available to use during their science lessons? If Yes, B. What [access] do the students have to computers?

			[access]: Each student has a computer, The class has computers that students can share, The school has computers that the class can use sometimes C. How [often] do you have the students do the following [activities] on computers during science lessons? [often]: Every or almost every day, Once or twice a week, Once or twice a month, Never or almost never [activities]: Practice skills and procedures, Look up ideas and information, Do scientific procedures or experiments, Study natural phenomena through simulations, (Process and analyse data (8 th Grade))
	PIRLS R14 (Reading)		A. Do the students in this class have computers (including tablets) available to use for their reading lessons? If Yes, B. What [access] do the students have to computers? [access]: Each student has a computer, The class has computers that students can share, The school has computers that the class can use sometimes C. How [often] do you do the following [computer activities] during reading lessons? [often]: Every or almost every day, Once or twice a week, Once or twice a month, Never or almost never [computer activities]: Asking students to read digital texts, Teach students strategies for reading digital texts, Teach students to be critical when reading on the Internet, Ask students to look up information (e.g., facts, definitions, etc.), Ask students to research a particular topic or problem, Ask students to write stories or other texts
ICT skills	TIMSS M09 (Mathematics)	TIMSS M24 (Mathematics)	In the past two years, have you participated in [professional development] in any of the following? [professional development]: ... Integrating information technology into mathematics
	TIMSS S08 (Science)	TIMSS S23 (Science)	In the past two years, have you participated in [professional development] in any of the following? [professional development]: ... Integrating information technology into science
ICT support	PIRLS R05		In your view, to what extent do the following [limit] how you teach this class? [limit]: ... Lack of support for using information technology

Relevant Variables School Principals & Department Heads			
Topic	Code 4th Grade	Code 8th Grade	Label
ICT access	TIMSS G11 PIRLS G11	TIMSS G10	[How many] computers (including tablets) does your school have for use by <fourth grade>/<eighth grade> students? [How many]: _____ computers (Write in the number.)
	TIMSS G13	TIMSS G12	If yes (Does your school have a school library?), A. Approximately how many [books (print and digital)] with different titles does your school library have (exclude magazines and periodicals)? [books (print and digital)]: ... Digital: 250 or fewer, 251-500, 501-2,000, 2,001-5,000, 5,001-10,000, More than 10,000

			B. Approximately how many [titles of magazines and other periodicals (print and digital)] does your school library have? [titles of magazines and other periodicals (print and digital)]: ... Digital: 0, 1-5, 6-10, 11-30, 31 or more
	TIMSS G14A-C PIRLS G12A & B	TIMSS G13	How much is your school's capacity to provide instruction affected by a shortage or inadequacy of the following? A. General School Resources: ... Technologically competent staff, Audio-visual resources for delivery of instruction (e.g. interactive white boards, digital projectors), Computer technology for teaching and learning (e.g. computers or tablets for student use) B. Resources for Mathematics Instruction (only TIMSS): ... Computer software/applications for mathematics instruction C. Resources for Science Instruction (only TIMSS): Computer software/applications for science instruction (B. PIRLS) Resources for Reading Instruction (only PIRLS): ... Computer software/applications for reading instruction, Library resources (books, ebooks, magazines, etc.)
ICT use	TIMSS G16 PIRLS G14	TIMSS G15	To what degree is each of the following a [problem] among <fourth grade> students in your school? [problem]: ... Intimidation or verbal abuse among students (including texting, emailing, etc.), Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.)

Relevant Variables Curriculum			
Topic	Code 4th Grade	Code 8th Grade	Label
ICT use	TIMSS M07 (Mathematics)	TIMSS M07 (Mathematics)	A. Is there a process for approving the mathematics instructional materials? If Yes...Please describe the process, and what materials (e.g., textbooks, workbooks, online materials) must be approved through this process B. Does the national curriculum contain statements/policies about the use of technology (e.g., computers, tablets, calculators) in grade 4 mathematics instruction? If Yes...What are the statements/policies? C. Does that national curriculum contain statements/policies about student use of technological aids (e.g., computers, tablets, calculators) in grade 4 mathematics tests or examinations? If Yes...What are the statements/policies?
	TIMSS S07 (Science)	TIMSS S07 (Science)	A. Is there a process for approving the science instructional materials? If Yes...Please describe the process, and what materials (e.g., textbooks, workbooks, online materials) must be approved through this process B. Does the national curriculum contain statements/policies about the use of technology (e.g., computers, tablets, calculators) in grade 4 science instruction? If Yes...What are the statements/policies?

	PIRLS R07 (Reading)		<p>A. Is there a process for approving the language/reading instructional materials? If Yes...Please describe the process, and what materials (e.g., textbooks, workbooks, online materials) must be approved through this process</p> <p>B. Is there a policy of encouraging teachers to find and develop language/reading materials other than those prescribed by the national curriculum? If Yes...Please describe the policy.</p> <p>C. Does that national curriculum contain statements/policies about student use of technology (e.g., computers, tablets, Internet) in language/reading instruction? If Yes...What are the statements/policies?</p> <p>D. Is there a program to apply for funding to subsidize reading resources (e.g. library, instructional materials, technology)? If Yes...Please describe the program.</p> <p>E. Does your country (state, province) offer a national program targeting struggling readers in the fourth grade (e.g., Reading Recovery®)? If Yes...Please describe the program.</p>
ICT skills	PIRLS R10 (Reading)		<p>How much [emphasis] does the language/reading curriculum place on [digital reading]? [emphasis]: Major emphasis, Some emphasis, Little or no emphasis [digital reading]: Strategies for reading digital texts, Looking up information to research a topic, Critical evaluation of Internet information</p>

Table A.7. List on indicators on ICT in ICILS

Background information		
Category/Questionnaire	Code	Label
ICT coordinator//Your School	IP2G07	Where is your school located
ICT coordinator//Your School	IP2G08BA	Percentage of students have the following backgrounds/from economically affluent home
ICT coordinator//Your School	IP2G08BB	Percentage of students have the following backgrounds/from economically disadvantaged homes
ICT coordinator	P_NUMSTD_CAT	Number of students in school (School size) - Categorized
ICT coordinator	P_NUMTCH_CAT	Number of teachers in school (School size) - Categorized
ICT coordinator	P_COMP	School composition by student background
Student//About you		
Student//About you	IS2G03	Which of the following [levels of education] do you expect to complete (1: ISCED level 6, 7 or 8; 2: ISCED level 4 or 5; 3: ISCED level 3; 4: ISCED level 2; 5: I do not expect to complete ISCED level 2)
Student//Your home and your family		
Student//Your home and your family	IS2G04A	In what country were you and your parents born/You
Student//Your home and your family	IS2G04B + IS2G04C	In what country were you and your parents born
Student//Your home and your family	IS2G05	What language do you speak at home most of the time
Student//Your home and your family	IS2G09 + IS2G13	What is the highest level of education completed by your [<parent or guardian 1>]
Student//Your home and your family	IS2G14	About how many books are there in your home

Relevant variables students		
Category	Code	Label
YOUR HOME AND YOUR FAMILY	IS2G15AA	How many of the following ICT devices are currently used in your home/Desktop or [laptop]
	IS2G15AB	computers [computers]
	IS2G15B	How many of the following ICT devices are currently used in your home/Tablet devices or e-readers (e.g. [iPad, Tablet PC, Kindle]) Internet connection at home
YOUR USE OF ICT	IS2G16A-C	How long have you been using each of the following ICT/Desktop or [laptop] computers How long have you been using each of the following ICT/Tablet devices or e-readers (e.g. [iPad, Tablet PC, Kindle]) How long have you been using each of the following ICT/[<Smartphones>] except for using text and calling
	IS2G17A-F	Who mainly taught you the following things/Communicate over the Internet/Create or edit documents/Create or edit digital presentations/Change settings on an ICT device/Find information on the Internet/Use programs and files in a computer network
	IS2G18A-D	How often do you use ICT in these places/At school for school-related purposes/At school for other purposes/Outside of school for school-related purposes/Outside of school for other purposes
	IS2G19A-H	How often for the following activities/Write or edit documents/Use a spreadsheet to do calculations, store data or plot graphs/Create a simple “slideshow” presentation/Record or edit videos/Write computer programs, scripts or apps/Use drawing, painting or graphics software or [apps]/Produce or edit music/Build or edit a webpage
	IS2G20A-J	How often use the ICT/Share news from current events on social media / Communicate with friends, family, or other people using instant messaging, voice or video chat /Send texts or instant messages to friends, family, or other people /Write posts and updates about what happens in your life on social media /Ask questions on forums or [Q&A, question and answer] websites /Answer other peoples’ questions on forums or [Q&A, question and answer] websites /Write posts for your own blog /Post images or video in social networks or online communities /Watch videos or images other people posted online /Send or forward information about events or activities to other people
	IS2G21A-H	How often use ICT for leisure activities/Search the Internet to find information about places to go or activities to do /Read reviews on the Internet of things you might want to buy /Read news stories on the Internet /Search for online information about things you are interested in /Use websites, forums, or online videos to find out how to do something /Play games /Listen to downloaded or streamed music /Watch downloaded or streamed TV shows or movies
USING ICT FOR SCHOOL	IS2G22A-J	How often use ICT for school-related purposes/Prepare reports or essays /How often use ICT for school-related purposes/Prepare presentations /How often use ICT for school-related purposes/Work online with other students /How often use ICT for school-related purposes/Complete [worksheets] or exercises /How often use ICT for school-related purposes/Organize your time and work /Take tests /Use software or applications to learn skills or a subject /Use the Internet to do research /Use coding software to complete assignments /Make video or audio productions
	IS2G23A-I	How often use ICT during lessons/[Language arts test language] /[Language arts: foreign or other national languages] /Mathematics /Sciences (general science and/or physics, chemistry, biology,

		geology, earth sciences) /Human sciences/Humanities / Social studies (history, geography, civics, law, economics, etc.)/ How often use ICT during lessons/Creative arts /[Information technology, computer studies or similar] /Practical or vocational subjects /Other (e.g. [moral/ethics, physical education, personal and social development])
	IS2G24A-K	Use of the following tools during class/Tutorial software or [<practice programs>] /Word-processing software /Presentation software /Spreadsheets /Multimedia production tools /Concept mapping software /Tools that capture real-world data /Simulations and modelling software /Computer-based information resources /Interactive digital learning resources /Graphing or drawing software
	IS2G25A-H	Learned tasks/Providing references to Internet sources /Search for information using ICT /Present information for a given audience or purpose using ICT /Work out whether to trust information from the Internet /Decide what information obtained from the Internet is relevant to include in school work /Organize information obtained from Internet sources /Decide where to look for information on the Internet about an unfamiliar topic /Use ICT to collaborate with others
	IS2G26A-D	The importance of the following topics/To change passwords regularly (e.g. network account...) /To check the origin of emails before opening attachments /To log out of a shared computer at the end of a session /To share information on social media responsibly
YOUR THOUGHTS ABOUT USING ICT	IS2G27A-M	How well can you do/Edit digital photographs or other graphic images /Create a database (e.g. using [Microsoft Access ®]) /Write or edit text for a school assignment /Search for and find relevant information for a school project on the Internet /Build or edit a webpage /Change settings on your device to improve the way it operates /Create a computer program, macro, or [app] /Set up a local area network of computers or other ICT /Create a multi-media presentation /Upload text, images, or video to an online profile /Insert an image into a document or message /Install a program or [<app>] /Judge whether you can trust information you find on the Internet
	IS2G28A-K	Agree or disagree with the following statements about ICT in society/Advances in ICT improve people's living conditions /ICT helps us to understand the world better /Using ICT makes people more isolated in society /With more ICT there will be fewer jobs /People spend far too much time using ICT /ICT is valuable to society /Advances in ICT bring many social benefits /Using ICT may be dangerous for people's health /I would like to study subjects related to ICT after [secondary school] /I hope to find a job that involves advanced ICT /Learning how to use ICT applications will help me to do the work I am interested in
STUDYING [<INFORMATION TECHNOLOGY>]	IS2G29A-I	To what extent you learned the following tasks/Display information in different ways /Break a complex process into smaller parts /To understand diagrams that describe or show real-world problems /To plan tasks by setting out the steps needed to complete them /To use tools to make diagrams that help solve problems /To use simulations to help understand or solve real world problems /To make flow diagrams to show the different parts of a process /To record and evaluate data to understand and solve a problem /To use real-world data to review and revise solutions to problems
	IS2G30	Do you study [<computing, computer science, information technology, informatics or similar>] in the current school year
CIL scores	PV1CIL-PV5CIL	Overall CIL Score: Computer and Information Literacy (5 plausible values)
CT scores	PV1CT-PV5CT	Overall CT Score: Computational Thinking (5 plausible values)

Derived scores	S_EXCOMP S_EXSMART S_EXTAB S_ICTSTUD S_INTNET S_SPECEFF S_GENEFF S_USECOM S_USEINF S_ACCONT S_SPECLASS S_GENCLASS S_CODLRN S_ICTFUT S_ICTLRN S_ICTNEG S_ICTPOS S_GENACT S_SPECACT S_USESTD	Computer experience in years Smartphone experience in years Tablet experience in years ICT studies in current school year Internet access at home ICT self-efficacy regarding the use of specialist applications ICT self-efficacy regarding the use of general applications Use of ICT for social communication Use of ICT for exchanging information Use of ICT for accessing content from the Internet Use of specialist applications in class Use of general applications in class Learning of ICT coding tasks at school Expectations of future ICT use for work and study Learning of ICT tasks at school Negative perceptions of ICT for society Positive perceptions of ICT for society Use of general applications for activities Use of specialist applications for activities Use of ICT for study purposes
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Relevant variables teachers		
Category	Code	Label
Your use of ICT	IT2G05A-B	Approximately how long have you been using ICT for teaching purposes/During lessons/Preparing lessons
	IT2G06A-D	How often do you use ICT in these settings/At school when teaching/At school for other work-related purposes/Outside school for work-related purposes/Outside school for non-work-related purposes
	IT2G07A-I	How well can you do these tasks/Find useful teaching resources on the Internet/Contribute to a discussion forum/user group on the Internet/Produce presentations with simple animation functions/Use the Internet for online purchases and payments/Prepare lessons that involve the use of ICT by students/Using a spreadsheet program for keeping records or analysing data/Assess student learning/Collaborate with others using shared resources/Use a learning management system
ICT and Teaching	IT2G09A-I	Emphasis given to developing ICT-based capabilities in your students/To access information efficiently/To display information/To evaluate the credibility/To share digital information/To use computer software/To provide digital feedback/To explore a range of digital/To provide references/To understand the consequences
	IT2G10A-N	Use the following tools in your teaching/Work on extended projects/Use the following tools in your teaching/Work on short assignments/Explain and discuss ideas with other students/Submit completed work for assessment/Work individually on learning materials at their own pace/Undertake open-ended investigations or field work/Reflect on their learning experiences/Communicate with other students on

		projects/Plan a sequence of learning activities for themselves/Analyze data/Evaluate information resulting from a search/Collect data for a project/Create visual products or videos/Share products with other students
	IT2G11A-J	Use of ICT for the following practices/Presenting information through direct class instruction/Providing remedial or enrichment support/Enabling student-led whole-class discussions and presentations/Assessing students learning through tests/The provision of feedback to students on their work/Reinforcing learning of skills through repetition of examples/Supporting collaboration among students/Mediating communication between students and experts/The communication with parents or [<guardians>]/Supporting inquiry learning
	IT2G12A-Q	Use the following tools in your teaching/Practice programs or apps where you ask students question/Digital learning games /Word-processor software/Presentation software/Spreadsheets/Video and photo software for capture and editing/Concept mapping software/Simulations and modelling software/A learning management system/Communication software/Collaborative software/Computer-based information resources/Interactive digital learning resources/Graphing or drawing software/e-portfolios/Digital contents linked with textbooks/Social media
	IT2G13A-I	Emphasis given to student learning of the following skills/To display information in different ways/To break a complex process/To understand diagrams that describe/To plan tasks by setting out the steps/To use tools making diagrams/To use simulations to help understand/To make flow diagrams to show/To record and evaluate data to understand/To use real-world data to review and revise
Your School	IT2G14A-H	Use of ICT in teaching at your school/ICT is considered a priority for use in teaching. /My school has sufficient ICT equipment (e.g. computers). /The computer equipment in our school is up-to-date. /My school has access to sufficient digital learning resources. /My school has good connectivity to the Internet/There is enough time to prepare lessons that incorporate ICT./ There is sufficient opportunity for me to develop expertise in ICT. /There is sufficient technical support to maintain ICT resources.
	IT2G15A-E	Use of ICT in teaching and learning/I work together with other teachers/I collaborate with colleagues to develop ICT based lessons. /I observe how other teachers use ICT in teaching. /I discuss with other teachers how to use ICT in teaching topics. /I share ICT-based resources with other teachers in my school.
Learning to Use ICT	IT2G16A-B	Did your [<initial teacher education>] include the following elements/Learning how to use ICT/Learn to use ICT in teaching
	IT2G17A-I	Participation in professional development/A course on ICT applications/A course or webinar on integrating ICT/Training on subject-specific digital resources/Observations of other teachers using ICT in teaching/An ICT-mediated discussion or forum on teaching etc. /The sharing of digital teaching and learning resources/Use of a collaborative workspace to jointly evaluate work/A course on use of ICT for [<students with special needs>]/Use of ICT to support personalized learning by students
Approaches to Teaching	IT2G18A-M	Using ICT at school/Impedes concept formation by students/Helps students develop greater interest in learning/Helps students to work at a level appropriate to their learning needs/Results in students copying material from Internet sources/Helps students develop problem solving skills/Distracts students from learning/Results in poorer written expression among students/Results in poorer calculation and estimation skills among students/Limits the amount of personal communication among students/Enables

		students to collaborate more effectively/Helps students develop skills in planning and self-regulation of their work/Improves academic performance of students/Enables students to access better sources of information
Derived scores	T_EXLES T_EXPREP T_COLICT T_VWNEG T_VWPOS T_CODEMP T_ICTEMP T_ICTPRAC T_USETOOL T_USEUTIL T_ICTEFF T_CLASACT T_RESRC T_PROFSTR T_PROFREC	ICT experience with ICT use during lessons ICT experience with ICT use for preparing lessons Collaboration between teachers in using ICT Negative views on using ICT in teaching and learning Positive views on using ICT in teaching and learning Teacher emphasis of teaching coding tasks in class Emphasis on ICT capabilities in class Use of ICT for teaching practices in class Use of digital learning tools Use of general utility software Teachers ICT self-efficacy Use of ICT for classroom activities Availability of computer resources at school Teacher participation in structured learning professional development related to ICT Teacher participation in reciprocal learning professional development related to ICT

Relevant school (school principal and ICT-coordinators) variables		
Category	Code	Label
ICT and Teaching	IP2G09A-G	Importance of ICT use/Developing students computer skills/Development of students ICT skills for collaboration with others/Using ICT for facilitating students responsibility for their own learning/Using ICT to augment and improve students learning/Developing students understanding and skills/Developing students proficiency in accessing and using information with ICT/Development of students ability to write [<apps>] or programs
	IP2G10AA-GE	Monitor teachers use ICT/Developing students computer skills/Reviewing lesson plans/Developing students computer skills/Teacher self-evaluation/Observing classrooms/By other means/Not monitored
	IP2G11A-K	ICT and Teaching/Teachers acquire skills/Integrating Web-based learning in their instructional practice/Using ICT-based forms of student assessment/Using ICT for monitoring student progress/Collaborating with other teachers via ICT/Communicating with parents via ICT/Communicating with students via ICT/Integrating ICT into teaching and learning/Using subject-specific learning software (e.g. tutorials, simulation) /Using e-portfolios for assessment/Using ICT to develop authentic (real-life) assignments for students/Assess students [<computer and information literacy>]
Management of ICT	IP2G12A-L	Management of ICT/Responsibility for ICT/The procurement of ICT equipment/Choice of non-digital learning materials/Choice of digital learning materials/Selection of a learning management system/Maintaining ICT equipment/Choosing whether ICT is used in teaching/The implementation of ICT-based approaches in teaching/The implementation of ICT-based approaches in administration/The use of ICT-based approaches to assessment/The assessment of students' [<computer and information

		literacy>]/Implementation of a [<computer and information literacy>] curriculum school/The development of ICT-related teacher competencies
	IP2G13A-L	/Procedures ICT use/Setting up security measures to prevent unauthorised system access or entry/Restricting the number of hours students are allowed to sit at a computer/Student access to school computers outside class hours (but during school hours) /Student access to school computers outside school hours/Honouring of intellectual property rights (e.g. software copyrights) /Prohibiting access to inappropriate material (e.g. pornography, violence) /Student use of non-school related games on school computers/Giving the local community (parents and/or others) access to school computers/Support for [<students with special needs or specific learning difficulties>]/Unacceptable behaviours towards other students (e.g. [<Cyberbullying>])/Providing students with their own laptop computers/Student use of their own ICT at school
	IP2G14A-H	Professional development/Participating in courses on the use of ICT in teaching/Training by another teacher who has attended a course on ICT/Discussing the use of ICT in education/Observing colleagues using ICT in their teaching/Discussing within groups of teachers about using ICT in their teaching/Participation in professional learning programs delivered online/Participating in courses conducted by an external agency or expert/Participation in a [<community of practice>] concerned with ICT in teaching
	IP2G15A-J	Priority to facilitate ICT/Increasing the numbers of computers per student in the school/Increasing the number of computers connected to the Internet/Increasing the bandwidth of Internet access for the computers/Increasing the range of digital learning resources/Establishing or enhancing an online learning support platform/Supporting participation in prof. development on pedagogical use of ICT/Increasing the availability of qualified technical personnel/Providing teachers with incentives to integrate ICT/Providing more time for teachers to prepare lessons/Increasing the professional learning resources
ICT Resources	I12G04A-E	Availability of technology resources/Digital learning resources that can be accessed offline/Digital learning resources that can only be used online/Access to the Internet through the school network/Access to an education site or network/Email accounts for school-related use
	I12G05A-N	Availability of software resources/Practice programs or [<apps>]/Single user digital learning games/Multi-user digital learning games with graphics and inquiry tasks/Word-processing software/Presentation software/Video and photo software for capture and editing/Concept mapping software/Data-logging and monitoring tools/Simulations and modelling software/A learning management system/Graphing or drawing software/e-portfolios/Digital contents linked with textbooks/Social media
	I12G06A-H	Availability of technology facilities/Remote access to a school network/Space on a school network for students to store their work/A school intranet with applications and workspaces for students/Internet-based applications for collaborative work/A 3D printer/Robots or robotic devices/Access to a wireless LAN (Wi-fi) /A learning management system
ICT Support	I12G11A-H	Who provides regular technical ICT support for teachers/Yourself/A network administrator in the school/Other ICT technical staff at the school/Other administrators and school staff/Other teachers/Education authority responsible for the school/Personnel from external companies/Students from this school

	I12G12A-F	Who provides pedagogical ICT support for teachers/Yourself/Other ICT technical staff at the school/Other administrators and school staff/Librarians/Other teachers/Relevant educ. authority responsible for the school
	I12G13A-N	Use of ICT hindered/Too few computers connected to the Internet/Insufficient Internet bandwidth or speed/Not enough computers for instruction/Lack of sufficiently powerful computers/Problems in maintaining ICT equipment/Not enough computer software/Insufficient of ICT skills among teachers/Insufficient time for teachers to prepare lessons/Lack of effective professional learning resources for teachers/Lack of an effective online learning support platform/Lack of incentives for teachers to integrate ICT use in their teaching/Restricted access to useful Internet resources/Insufficient technical ICT support/Insufficient pedagogical support for the use of ICT
	I12G15A-I	Emphasis given on the following tasks/Develop algorithms/Write computer programs/Evaluate computer programs/Develop applications/Refine computer code to improve efficiency/Debug computer code/Develop simulations/Test solutions to problems using simulations/Create visual displays of information or processes
Derived variables	P_EXPLRN P_PRIORH P_PRIORS P_VWICT P_ICTUSE P_ICTCOM P_EXPTCH C_EXP C_RATSMB C_RATSTD C_ICTDEV C_ICTSTD C_RATDEV C_HINRES C_HINPED C_ICTRES	ICT use expected of teachers - learning Priorities for facilitating use of ICT - hardware Priorities for facilitating use of ICT - support View on using ICT for educational outcomes Principals' use of ICT for general school-related activities Principals' use of ICT for school-related communication activities Expectations for teacher collaboration using ICT ICT experience in years in the school Ratio of school size and smart boards Ratio of school size and number of computers available for students Sum of ICT devices Sum of ICT devices available for student use Ratio of school size and number of ICT devices Computer resource hinderances to teaching and learning Pedagogical resource hinderances to teaching Availability of ICT resources at school

Table A.8. List on indicators on ICT in EU-SILC

Household variables		
Topic	Code	Label
Demographic	Gender, age and employment status	
Material deprivation	HS070	Have a telephone (including a mobile phone)
	HS080	Have a colour TV
	HS090	Have a computer
Internet connection	PD080	Internet connection for personal use at home

Table A.9. List on indicators on ICT in ISCWeB

Topic	Code	Label
Whether has: access to a computer at home	HaveAccessComputer	12. Which of the following things do or don't you have? Clothes in good condition to go to school in; Access to computer at home; Access to Internet; Mobile phone; Your own room; Books to read for fun; A family car for transportation; Your own staff to listen to music; A television at home that you can use (optional)
Whether has: access to the Internet	HaveAccessInternet	
Whether has: mobile phone	HaveMobilePhone	
How often spend time: Using a computer	FrequencyUseComputer	24. How often do you usually spend time doing the following activities when you are not at school? Taking classes outside school time on matters different than at school (like music, sports, dancing, languages, ...); Participate in organized leisure time activities (like youth movement, scout, ...); Reading for fun (not homework); Helping up around the house; Doing homework; Watching TV or listen to music; Playing sports or doing exercise; Using a computer; Spending time just being by myself; Taking care of brothers or sisters or other family members
How often spend time: Watching TV	FrequencyWatchTV	

Table A.10. List on indicators on Harmonised European Time Use Surveys

Household variables		
Topic	Code	Label
Demographic	Household size (number of persons in the household), number of persons aged <7 in the household, number of persons aged 7-17 in the household, number of persons aged 18+ in household, income, sex of respondent, age of respondent, lifecycle of respondent	
ICT indicators	HHQ6c	Number of TV sets in the household
	HHQ6d	Household has a satellite/ cable receiver
	HHQ6e	Household has a video recorder or DVD
	HHQ6l_1	Household has a landline telephone
	HHQ6m	Household has a mobile phone
	HHQ6o	Household has a personal computer
	HHQ6r	Household has an Internet connection
Individual variables		
Topic	Code	Label
Demographic	Main activity status, working last week, job, educational attainment level, self-perceived general health, country of birth, country of main citizenship, age	
Time use individuals	515	Communication by text messaging (SMS, instant messages, email, etc.)
	516	Time spent on social media
	721	Computing
	722	Information search using Internet
	729	Other or unspecified computing
	731	Solo games and play, gambling
	733	Computer games
	734	Console games (on home console)
	735	Mobile games (on handheld device/smartphone)
	821	Watching TV, video or DVD
	Mcom001 - Mcom144	Computer used during main activity

Individual variables		
Topic	Code	Label
Time use child	515	Communication by text messaging (SMS, instant messages, email, etc.)
	516	Time spent on social media
	721	Computing
	722	Information search using Internet
	729	Other or unspecified computing
	731	Solo games and play, gambling
	733	Computer games
	734	Console games (on home console)
	735	Mobile games (on handheld device/smartphone)
	821	Watching TV, video or DVD
	Mcom001 - Mcom144	Computer used during main activity

Table A.11. List on indicators on Educational Standard Assessment

Student variables		
Topic	Code	Label
ICT access at home	besitz_tablet	Is there a [device] at your home?
	besitz_ebook	[device]: tablet-pc (e.g. Apple iPad, Kindle Fire, Nexus 7), e-book reader (e.g. Kindle, Kobo, Tolino)
ICT use for school	maueeb_wh_it, engueb_wh_it	How many hours do you spend on a computer/use educational software on a normal week to study for the [subject]? [subject]: Mathematics, English
	zeit_lesen_comp	How many hours do you spend on reading online or reading e-books on a normal (school)day (outside school time)?
	Not available yet	How often do you read e-books in [language] in your free time? [language]: your everyday language, English
ICT use at school		How often does the [following] occur in the [lessons]?
	maup_perss_pc deuup_perss_pc deu_up_pc	[following]: We work with a computer (available for the years: 2018, 2017, 2016, 2015, 2013, 2012) [lessons]: Mathematics, German
	maup_perss_tablet	[following]: We work with a tablet (e.g. iPad) (available for the year 2018)

Teacher variables (since 2018 because prior teachers were not sampled)		
Topic	Code	Label
ICT use at home and at school	Internet_nutzen_zh	How often do you use the Internet [at/for]?
	Internet_nutzen_unterrichtsvorb	[at/for]: at home (zh), to prepare lessons (unterrichtsvorb), during lessons with the students (u)
	Internet_nutzen_u	
ICT attitudes		How much do you agree to the following [statements] regarding the use of eLearning in lessons?
	nmedien_ifoerd	[statement]: eLearning enables individual learning support.
	nmedien_scueb	[statement]: The use of eLearning promotes cooperation across classes and schools.
	nmedien_team	[statement]: Teachers are encouraged to work in teams by using eLearning.
	nmedien_mot	[statement]: The use of eLearning during lessons increases students' motivation.
	nmedien_method	[statement]: The use of eLearning widens the variety of methods during lessons .
	nmedien_didakt	[statement]: The implementation of various didactical concepts is supported by the use of eLearning.
	nmedien_ikult	[statement]: eLearning is an essential element of the new learning culture.
ICT practice at school	lernplat_verwen	Does your school use a learning platform?
		How often do you, as a teacher, use the learning platform for the following [tasks]?
	nutzen_lernplat_info	[task]: Providing information to the students.

nutzen_lernplat_ueb	[task]: Supporting individual tasks and the definition of learning contents for the students.
nutzen_lernplat_hue	[task]: Students' submission of individual assignments (homework, projects).
nutzen_lernplat_bewert	[task]: Evaluation and feedback.
nutzen_lernplat_dok	[task]: Achievement documentation.
nutzen_lernplat_komms	[task]: Communication and exchanging opinions with students.
nutzen_lernplat_kommsu	[task]: Communication and exchanging opinions between students.
nutzen_lernplat_klueb	[task]: Cooperation across classes.
nutzen_lernplat_kommlp	[task]: Communication with teachers.

School principal variables (numbers of indicators increased sufficiently in 2018)		
Topic	Code	Label
ICT access at school	comp_it_raum	How many computer labs do you have at your school for students?
	comp_it_aplatzx	How many computer work places are in the computer lab x (for x ∈ number of labs in comp_it_raum).
	comp_it_aplatzx	Do the computer labs have access to the Internet?
	comp_it_aplatzx	How many classrooms have at least one computer for teaching available?
	comp_it_klint	Do the computers in the classrooms have access to the Internet?
	tab_it_groesse laptop_it_groesse	In total, how many [devices] are available for students? [devices]: tablets, laptops
	tab_it_Internet laptop_it_Internet	Do students have access to the Internet when using [devices] at school? [devices]: tablets, laptops
	comp_it_lp	How many computer working places are available for teachers?
ICT attitudes		How much do you agree to the following [statements] regarding the use of eLearning in lessons?
	nmedien_lfoerd	[statement]: eLearning enables individual learning support.
	nmedien_scueb	[statement]: The use of eLearning promotes cooperation across classes and schools.
	nmedien_mot	[statement]: The use of eLearning during lessons increases students' motivation.
	nmedien_method nmedien_ikult	[statement]: The use of eLearning widens the variety of methods in lessons. [statement]: eLearning is an essential element of the new learning culture.
ICT problems		Which of the following [problems] occur at your school relating to computers at your school. How big are these problems in your school?
	comp_prob_groesse	[problem]: The school does not have enough computers/computer labs.
	comp_prob_veralt	[problem]: The computers are outdated/slow.
	comp_prob_wissen comp_prob_kap	[problem]: The teachers do not have the computer competencies needed. [problem]: The computers are often broken (do not work properly).
	comp_prob_Internet	[problem]: There is no or not enough Internet access for the students.

	comp_prob_wartung	[problem]: Continuous technical support/maintenance of the computers or networks.
	comp_prob_lp	[problem]: At our school, there are not enough teachers with sufficient computer skills.
	comp_prob_einsatz	[problem]: Teachers rarely use the computer for their subjects.
	comp_prob_fortb	[problem]: Teachers only attend few training and educational courses in the field of modern information technology.
Future ICT projects		For the next two school years, what priority do the following [projects] have for your school?
	prior_it_compraum	[project]: Setting up a/additional computer lab(s) at the school.
	prior_it_comp	[project]: Buying new computer work places.
	prior_it_nb	[project]: Buying new laptops.
	prior_it_tab	[project]: Buying new tablets.
	prior_it_software	[project]: Buying better/more modern software for lessons.
	prior_it_modcomp	[project]: Exchanging old computers by more modern/more powerful ones.
	prior_it_zugang	[project]: Achieving better technical access to the Internet.
	prior_it_aplatzints	[project]: Setting up more workplaces with Internet access for the students.
	prior_it_aplatzintl	[project]: Setting up more workplaces with Internet access for the teachers.
	prior_it_fortb	[project]: Providing better training and educational courses offers in the field of modern information technology for teachers.
	prior_it_wartung	[project]: Providing better service (maintenance) for the computers at school.
	prior_it_vith	[project]: Adding compulsory IT-classes to the curriculum.
	prior_it_modit	[project]: Supporting the use of modern information technology.
	prior_it_uform	[project]: Developing new forms of teaching/teaching models involving the computer.
prior_it_scprog	[project]: Creating a school programme with a special focus on modern information technologies.	
prior_it_sperrung	[project]: Denying students access to certain websites.	

School principal variables (prior 2018)		
Topic	Code	Label
ICT problems	uk_beintraecht_it	In your opinion, is learning at your school negatively affected by the following factors: due to lacking or inadequate computer equipment for teaching.

Table A.12. List on indicators on Statistics Estonia

Topic	Code	Label
Types of households with the type of Internet connection (2005-2016)	IT21	Adult with children; two adults with children; at least three adults with children
		Adult with children; two adults with children; at least three adults with children
Info Technological devices in the households based on place of residence and type of the devices (2005-2006)	IT211	Rural area; city area
		Mobile phone; mobile phone with the access to Internet; TV; satellite-TV; cable TV; digi-TV; gaming console; laptop; computer; tablet
Info Technological devices in the households based on the type of household and type of the devices (2005-2006)	IT22	Household with one adult and children; household with two adults with children; household with three or more adults with children.
		Mobile phone; mobile phone with the access to Internet; TV; satellite-TV; cable TV; digi-TV; gaming console; laptop; computer; tablet
16-74 years old computer users based on the group and place of use (2005-2011)	IT33	User group: men, women, 16-24 years old
		At home; at work; in the educational institution; at someone else's place; elsewhere (hotels, airports and etc).
16-74 years old computer users based on the place of residence and place of use (2005-2011)	IT 331	Rural area; city area
		At home; at work; in the educational institution; at someone else's place; elsewhere (hotels, airports and etc).
16-74 years old Internet users based on the users group and location of use (2005-2013)	IT34	User group: men, women, 16-24 years old
		At home; at work; in the educational institution; at someone else's place; elsewhere (libraries, post offices and etc.).
16-74 years old Internet users based on the skills of usage and groups (2005-2013)	IT37	User group: men, women, 16-24 years old
		Using search engine; sending email with attachment; posting in forums and chat rooms; using Internet for a call; using the file exchange programs; creating a website
16-74 years old Internet users based on their place of residence and skills of usage (2005-2013)	IT371	Rural area; city area
		Using search engine; sending email with attachment; posting in forums and chat rooms; using Internet for a call; using the file exchange programs; creating a website
16-74 years old Internet users based on place of residence and public sector e-services usage (2011-2012)	IT39	Rural area; city area
		Description of 23 types of public services available online
16-72 years old Internet users based on place of residence and public sector e-services usage (2013-2015)	IT392	Rural area; city area
		Description of 31 types of public services available online
Awareness of e-services of 16-74 years old based on the	IT40	Rural area; city area
		Not satisfied at all; rather not satisfied; neither this or that; rather satisfied; very satisfied

satisfaction of e-services and place of residence (2011-2015)		
Awareness of Internet cookies and restricting their use in web browsers among 16-74 years old user groups (2015-2016)	IT46	Aware of Internet cookies; changed the settings of web browsers because of Internet cookies Men; women; 16-24 years old
Mobile phone users among 16-74 user groups (2012)	IT61	User group: men, women, 16-24 years old
Using Internet away from home and work with a portable device among 16-74 years old user groups and the devices used and the type of Internet connection (2012)	IT62	User group: men, women, 16-24 years old Mobile phone; other handheld device; laptop; tablet; WIFI; mobile network;
Using Internet away from home and work with portable device based on user groups and frequency of use (2012)	IT63	Handheld device; laptop or computer Men; women; 16-24 years old Everyday or almost everyday; every week, but not every day; less frequently than every week
Using Internet away from home and work with portable handheld device based on user groups and purpose of use (2012)	IT64	Men; women; 16-24 years old Sending an email; reading news, newspapers and magazines; reading online books or ebooks; gaming, listening to music, looking at pictures and etc; receiving audio- or video files via podcast; participating in social network; using GPS
Using Internet away from home and work with laptop, computer or handheld device based on user groups and problems emerged while using Internet (2012)	IT65	Men; women; 16-24 years old lack of information regarding the fees of using Internet; unexpectedly high fees; continuous difficulties with a mobile network signal; difficulties in configuring Internet connection and changing settings; small screen or difficulties typing text
User groups and reasons for not using Internet away from home or work with laptop, tablet or handheld devices (2012)	IT66	Men; women; 16-24 years old There is no need; don't know how or too difficult to use; devices or the connection is too expensive; broadband connection is not available or is too expensive; concerns regarding safety or privacy

Table A.13. List on indicators on JIM study 2019. Youth, Information, Media

Relevant variables (only children were asked)

Category	Label	
Household ICT access	Household access to [devices]	[devices]: Smartphone, Computer/Laptop, Internet access, TV, radio, DVD-Player, fixed game console, Tablet, TV with Internet access, MP3-Player/iPod, handheld game console, E-Book-Reader, Streaming-Box/-Stick, Wearable, radio with Internet access, digital language assistant
	Further media use in household	[media]: video streaming, music streaming, newspaper subscription, magazine subscription, TV subscription
Child's ICT access	Child's [digital device] ownership	[digital device]: Smartphone, Computer/Laptop, Internet access, TV, radio, DVD-Player, fixed game console, Tablet, TV with Internet access, MP3-Player/iPod, handheld game console, E-Book-Reader, Streaming-Box/-Stick, Wearable, radio with Internet access, digital language assistant
ICT use in leisure time	Child's frequency of [device] use in leisure time	[devices]: Internet, smartphone, music-streaming, online-videos, radio, streaming, digital games, e-books, movies, tablet, online newspaper, online magazine, YouTube,
	Frequency of [device] used to access the Internet	[device]: smartphone, laptop, TV tablet, PC, gaming console
	[Who] pays for child's cell phone bill	[Who]: parents, myself, partly parents
	Child's daily Internet use (Monday - Friday) in minutes	
	3 preferred online applications	
Social media use	Online communication applications used several times a week	
	Activities on Instagram and snapchat	
TV use	[Ways] of TV use	[Ways]: TV, online PC or laptop, smartphone, tablet, gaming console
	[Options] for TV use	[Options]: media library, at the time of tv broadcast, after TV broadcast, YouTube, live stream, recorded TV broadcast
	Preferred TV broadcast	

	ICT use for streaming [via] at least several times a week	[via]: YouTube, Netflix, Amazon Prime Video, media library, sky, Telekom Entertain TV, Maxdome, iTunes, Vimeo
	Activities on YouTube	
Online activities	[Online activities] several times a week	[Online activities]: search engine like Google, Videos on YouTube to gather information, Wikipedia, news on Facebook/Twitter, news portal, magazine portal, news on online providers like Gmx, TV portals
Digital games	Child's [frequency] of playing online games	[frequency]: daily up to several times week, once a week up to every 2 weeks, once a month
	Digital games are used via	[via]: phone, console, computer (offline), tablet
	Rank most favourable digital games	
	Unintentional purchase /subscription during gaming	
Cyber bullying	Has someone already spread embarrassing/offensive pictures showing you?	
	How often have you already encountered hate messages on the Internet?	
	On which platform do you receive hateful messages the most?	

Table A.14. List on indicators on KIM study 2018. Childhood, Internet, Media

Relevant variables (children and parent)

Category	Label	
Child's interest	Child's [interest] in ... [Child]: 6-13 year old child	[interest]: Friendship, school, sports, smart phone, music, Internet/computer/laptop, digital games, toys, animals, movies, fashion, movie and TV stars, environment/nature, books/reading, technology, foreign countries, current events happening around the globe
Answered by parents	Household access to [digital devices]:	[digital devices]: phone/Smartphone, Computer/Laptop, Internet access, TV, Radio, Smartphone, CD-Player, DVD-Player, digital camera, gaming console, tape recorder, daily news subscription Tablet-PC, TV with Internet access, child computer, Pay-TV subscription, Streaming, Streaming-Box - Stick
Household's ICT access		
Answered by parents	Child's [device] ownership	[device]: phone/Smartphone, CD-Player, gaming console, TV, handheld gaming console, Smartphone, Radio, tape recorder, Computer/Laptop, Internet access, child computer, Laptop, Video recorder/DVD-Player, digital camera, Computer, Tablet-PC
Child's ICT access		
Child's leisure activities and media	How often do you spent your leisure time [on/with]	[on/with]: watching TV, meeting friends, homework/studying, playing indoor, playing outdoor, family/parents, listening to music, sports, digital games, smart phone, PC (offline), Internet, listening to radio, drawing/crafting, reading books, animals, readings comics, watching videos, watching videos online, board games, taking pictures, youth group, reading magazines, using tablet, at library, reading news, going to the cinema, making music,
	Child's most favourable [leisure activity]	[on/with]: watching TV, meeting friends, homework/studying, playing indoor, playing outdoor, family/parents, listening to music, sports, digital games, smart phone, PC (offline), Internet, listening to radio, drawing/crafting, reading books, animals, readings comics, watching videos, watching videos online, board games, taking pictures, youth group, reading magazines, using tablet, at library, reading news, going to the cinema, making music,

Child's ICT use	Child uses [type of media] [with]	[type of media]: watching TV, watching videos, playing online games, listening to radio, Internet surfing, watching videos online, playing games on the smart phone, on the tablet
	[with]: alone, friends, parents, siblings, I don't use it at all	
	Child's (smartphone users) use the smartphone for the following [functions]	[functions]: receive calls from parents, call parents, receive messages, send messages, call others (other than parents), receive messages from others (other than parents), play games, take pictures make videos, use the Internet, use apps, receive voice messages, send voice messages, send pictures/videos
	Child's (tablet users) use the tablet for following [functions]	[functions]: play games, use the Internet, watch pictures/videos, paint, play online together with others
	Most important [type of media] [during the day]	[during the day]: waking up, breakfast, on the way to school, breaks, lunch, studying, dinner, going to bed
	Most important [type of media] [during leisure time]	[during leisure time]: when alone at home, when being together with my family, when being together with friends, when parents drive the car, when visiting a restaurant with my parents
Child's use of computer	Children who use a computer /laptop at least seldom	[type of media]: TV, Radio, books, computer games, Internet, smartphone, Tablet-PC, MP3-Player/CDs, no media
	[Places] where child use computers	Measure: Percentage
Answered by parents	Children who own a smartphone	[Places]: at home, in school, at friends' home
Child as smartphone holder		Measure: Percentage
Child's Internet use	Children who use the Internet	Measure: Percentage

	[frequency] of Internet use (Internet users)	[frequency]: almost every day, one to several times a week, less frequently than once a week
	[Places] where child (Internet user) uses Internet	[Places]: at home, in school, at friends' home, on the way
	[Ways] and [frequency] of Internet use	[Ways]: PC/Laptop, Smartphone, gaming console, Tablet-PC
	[frequency]: almost every day, once to several times a week, less frequently than once a week, never	
	Child's (Internet user) [online activities] and [frequency] of activity use	[Online activities]: search engine like Google, send WhatsApp messages, watch YouTube videos, use websites for children, surf, Facebook, send e-mails, use Wikipedia, use Internet to listening to music, watch TV broadcasts online, use skype, use the Internet to listen to the radio
	[frequency]: almost every day, once to several times a week	
	Preferred Internet websites (Internet user)	
	[How much] do you like using the Internet (Internet user)?	[How much]: very much, much, not that much, not at all
	Children (Internet user) who are [looking for ...] at least once a week on the Internet	[looking for]: homework/school related information, online games, information on celebrities, news, things I want to buy, nearby leisure time activities, cooking/crafting instructions, information on pets, problem advice
Child's ways of communication	Children with at least almost daily contact to friends [via]	[via]: personal contact, sending WhatsApp messages, chatting via Facebook, calling each other, sending e-mails
	In which [ways] do you usually set up a meeting with your friends?	[ways]: by walking by, by sending a text message, using a fixed network call, using a call via mobile phone, we always meet at a fixed place, by sending a voice message
WhatsApp groups	Are you a member in a WhatsApp group (WhatsApp user)?	
	[Type] of WhatsApp group usage	

		[Type]: I only read along, I also send messages sometimes, partly both, don't know
Facebook	Did someone help you to sign on Facebook (Facebook user)?	[Who]: father, mother, friends, siblings
	If yes, [who]?	
	Child's (Facebook user) [activities] on Facebook	[activities]: chatting, I post what I'm doing at the moment, I post something on others' Facebook walls, watching videos, upload pictures, looking for people, playing games
YouTube	Child's (Internet user who watch YouTube videos) [content] use on YouTube	[content]: funny clips, music videos, animal videos, sports videos, fashion/beauty videos, YouTuber, tutorials, school related topics, TV broadcasts, Let's play videos, product tests
PC use at school	Not relevant	
PC use at home for school	Not relevant	
Digital games	Child's [frequency] of playing digital games	[frequency]: almost every day, once up to several times a week, less than several times a week, never
	From whom did you (children that are too young for games they are playing) receive games you are too young for?	[whom]: exchanged them with others, mother, friends, father, siblings, borrowed from others, bought them by myself
Smartphones	Child's [frequency] of using a smartphone	[frequency]: almost every day, once up to several times a week, less than several times a week, never
Answered by parents	Do you think that the age rating for media is useful ?	Very useful, useful, not that useful, not useful
Age rating for games/videos	Do you think it would be useful to add further information why this game/movie released for children as of a certain age?	Very useful, useful, not that useful, not useful
	Is your child allowed to play games that are released for older children only?	Fully agree, mainly agree, mainly don't agree, don't agree at all
	Do you pay attention to the age rating when you are buying digital games?	

How much do you agree that the **age rating gives advice** on the age at which a game is **pedagogically recommended**?

How much do you agree that the age rating shows the age limit for which games are **allowed to be sold** to children?

How much do you agree that regarding the games you select for your child you **trust in your own judgement rather than on the age ranking**?

Child's ICT skills

Are you good at [skills]

[skills]: play a DVD, to access the Internet by yourself, to print something, ...

Online risks

Have you ever experiences situations [that]?

[that]: were unsuitable for children, scared me, were uncomfortable to me

Answered by parents

Did your child ever come across ... ?

Extremism, violence, pornography

Have you [ever] met unpleasant people online?

[ever]: once, several times

All answered by parents - Media and family

[Role] of [media] for children

[Role]: supports child's fantasy, learning from media, effect on readiness to use violence, gives an indication of real life, make them able to have a say, children experience inappropriate things, it's important for school, give an idea of what is "good" and what is "bad", children become stay-at-homes, leads to conflicts within the family

[Statements], share of parents who agree

[Statements]: the Internet is dangerous for children, children are able to learn many new things by using a PC, children are supposed to learn the use of Internet/PC at school, children are supposed to learn the use of the Internet/PC from their parents, child is allowed to use the Internet without supervision

	Predicted daily use of [media] in minutes	[media]: TV, radio, Internet, books/reading, PC/digital games, phone/digital games, tablet games
Rules	Are there any rules about the [media] content used and the time spent for media consumption	[media]: TV, radio, Internet, books/reading, PC/digital games, phone/digital games, tablet games
	Are there certain [time or situations] the child is not allowed to use any type of media?	[time or situations]: during homework, during breakfast, during lunch, during dinner, at the restaurant, before breakfast, just before going to bed
	Do you use the [following] [via] in your family?	[following]: Child protections software, programs to limit user time, programs to lock problematic content, child adapted safety settings at the device, own user account for child [via]: different devices
	Is your child allowed to use the Internet via a childproof website only ?	
	[Statements] about filtering programs , share of parents who agree	

Table A.15. Safer Internet for Kids Survey for children’s online habits, social media influence and online gaming, 2019-2020

Relevant variables school		
Topic	Code	Label
Identification		Region, municipality, type of school (primary school, high school (Gymnasium), Lyceum)
Children and the Internet	-	Do you play online games?
	-	Have you ever been a victim of misinformation (e.g. believed something that turned out to be fake news)?
	-	Do you believe that everything you read on the Internet is true? [Yes, No]
	-	If something serious happens to you online would you tell your parents? [Yes, No]
	-	Do your parents impose any rules for the kind of videos you watch on the Internet? [Yes, No]
Online Risks	-	If something happens during online gaming and upsets you will you tell your parents? [Yes, Maybe, No]
	-	Has anyone ever tried to bully you/threaten that he/she will upload your very personal photos or video on the Web? [Yes, No]
	-	Do you play online games with people that you don’t know in real life? [Yes, No]
	-	Do you chat with people you met during online gaming? [Yes, No]
	-	Do you sleep very late at night because you are engaged in online gaming? [Yes, No]
	-	Do you know how to protect your electronic devices from harmful software? [Yes, No]
Social media use	-	Do you know any existing tools? [Yes, No]
	-	When you upload a photo on the Web do you use filters to make it look better? [Yes, No]
	-	When you upload a photo on the Web are you anxious about how many likes it will have? [Yes, No]
	-	In the social media that you use do you have your profile private? [Yes, No]
	-	Do you accept friend-requests in the social-media that you use? [Yes, No]
	-	Has anyone tried to contact you through the social-media network that you use? [Yes, No]
	-	What social media do you use more frequently? [Viber, Snapchat, Tik Tok, Facebook, Instagram]
Time Restrictions in the use of Internet	-	Do you use You Tube? [Yes, No]
	-	Do you think you have Internet addiction? [Yes, No]

Table A.16. Online behaviour of students aged 10-17 years old in Greece, 2018

Relevant variables school		
Topic	Code	Label
Identification		Region, municipality, type of school (primary school, high school (Gymnasium), Lyceum)
Children and the Internet	-	When did you start to use the Internet [4-6 years old, 7-8 years old, 9-10 years old, >10 years old]
	-	What was your first device when you started to use the Internet [my parents smart phone, my parents tablet/PC, a gaming console, my own tablet/smart phone, another device]
	-	At what age did you get your own smart phone? [not yet, 8-10 years old, 10-12 years old, 12-14 years old, other]
	-	How frequently do you use the Internet during the week? [every day, only on weekends, 3-4 days/week, just a little]
	-	What do you do more frequently when you are online? [play games, communicate with friends, upload image/videos, read news, study school projects, follow influencers on social media, watch movies or listen to music]
	-	Did you get any guidance in the process of learning how to use the Internet? [I learned on my own, from my parents, from my bigger brother/sister, from my teachers]
	-	Are you surfing the Internet on your own or under the supervision of your parents? [on my own, under the supervision of my parents]
	-	Do your parents impose any rules for the use of the Internet? [Yes, No]
	-	Do you believe you know how to use the Internet safely [No, Yes, totally]
	-	From whom/where have you been informed about being cautious while surfing online? [from my parents, from an older sibling, from my friends, from school, I haven't been informed]
	-	Do you know how to report someone/something that upset you online? [Yes, No]
	-	If something serious happens to you online to whom would you turn for help? [No on, I'll deal with it on my own, from my parents, from my friend(s), from somebody I trust]
	Online Risks	-
-		How did you react when you were cyber-bullied? [I didn't handle it well, so I had created more problems, I started talking to the bully to see his/her intentions, I blocked the bully, I talked to an adult about it]
-		Do you accept friend request from strangers? [Yes, No, Yes if we have friends in common]
-		Have you ever met somebody you only new online? [Yes, No, Yes but I went with my parents]
-		Have you encountered inappropriate/violent content while surfing the web? [Yes, No]
-		Have you shared very personal photos online? [Yes, No]
-		Have you ever been the victim of cyber bullying? [Yes, No, I don't know]
-		If yes, how did you deal with cyber bullying? [I am still dealing with it, I ignored it, I dealt with it on my own, I talked to an adult about it]
-		Have you witnessed cyber bullying? [Yes, No]
-		If yes, how did you deal with it? [I tried to support the victim, but I didn't tell anybody, I ignored it, I talked to an adult about it]
-		Do you think about the impact a photo or a video could have on your online reputation when you post it? [I can delete it anytime, so it won't have an impact on me, Yes, No]

	-	From where do you read the news? [from news site, from posts in social media, from posts my friend do, elsewhere]
		Can you recognize fake news online [Yes, No, only when it is really clear]
Social media use	-	Do you have any social media account(s)? [Yes, No]
	-	Did you open your account on your own or with the approval of your parents? [I use the accounts of my parents, with the approval of my parents, on my own]
	-	At what age did you start using social media? [8-10 years old, 10-12 years old, 13-14 years old, >14 years old]
		Do you have a private profile on social media? [Yes, No, I don't know]
		Do you know how to report somebody/something that upset you? [Yes, No]
		What social media do you use more frequently? [Skype, Viber, You Tube, Snapchat, Messenger, Facebook, Instagram]
Time Restrictions in the use of Internet	-	Do you think you neglect your hobbies in order to surf online? [never, sometimes, often, very often]
	-	Do you think you have Internet addiction? [definitely yes, yes, no, I don't know]
	-	How many hours to you watch videos in You Tube per workday? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]
	-	How many hours a day to you watch videos in You Tube during the weekend? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]
	-	How many hours to you spend on social media per workday? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]
	-	How many hours a day to you spend on social media during the weekend? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]
	-	How many hours to you spend on online gaming per workday? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]
	-	How many hours a day to you spend on online gaming during the weekend? [not at all, up to 2 hours, 3-4 hours, more than 4 hours]

Table A. 17. European research on Internet use by young people

Relevant variables household		
Topic	Code	Label
Socio-Demographics		gender, age, weight, height, country born, academic performance, marital status of parents, age of father, mother, labour market state of father, mother, occupation of father, mother, educational level of father, mother, country born of father, mother, family size, number of siblings (Questions 1-19)
Internet use	20	How old were you when you first started using the Internet? [Age, I do not remember]
	21.A	Are you a member of at least one social networking site (e.g. Facebook)? [Yes, No]
	21.B	If yes, in which social network are you a member of? [Facebook, ONE COUNTRY-SPECIFIC CHOICE, Other]
	21.C.a	How many friends do you have on Facebook? [Number]
	21.C.b	How many friends do you have on ONE COUNTRY-SPECIFIC CHOICE? [Number]
	21.C.c	How many friends do you have on Facebook? [Number]
	21.D.a	During the past 12 months, about how long do you spend on social networking sites (e.g., Facebook) on social networking sites on a normal school day? [Just a few minutes, About half an hour, About an hour, About an hour and a half, About two hours, About two hours and a half, About three hours, About three hours and a half, About four hours, More than four hours, None at all, Do not know/Prefer not to say]
	21.D.b	During the past 12 months, about how long do you spend on social networking sites (e.g., Facebook) on social networking sites on a normal non-school day (weekends, holidays)? [Just a few minutes, About half an hour, About an hour, About an hour and a half, About two hours, About two hours and a half, About three hours, About three hours and a half, About four hours, More than four hours, None at all, Do not know/Prefer not to say]
Where and how adolescents access the Internet	22.A	During the past 12 months, how often have you used your own PC (desktop computer) to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.B	During the past 12 months, how often have you used your own laptop that you mainly use and can take to your own room to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.C	During the past 12 months, how often have you used a PC shared with other members of your family to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.D	During the past 12 months, how often have you used a laptop shared with other members of your family and that you cannot take to your room to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.E	During the past 12 months, how often have you used a mobile phone to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.F	During the past 12 months, how often have you used a games console such as PlayStation to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	22.G	During the past 12 months, how often have you used a television set to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]

	22.H	During the past 12 months, how often have you used other handheld portable devices (e.g. iPod touch, iPhone or Blackberry) to go on the Internet [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.A	During the past 12 months, how often have you been at your bedroom when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.B	During the past 12 months, how often have you been at the Living room (or other public room) at home when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.C	During the past 12 months, how often have you been at school when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.D	During the past 12 months, how often have you been in an Internet café (cybercafé) when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.E	During the past 12 months, how often have you been in a public library or other public place when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.F	During the past 12 months, how often have you been at a friend's home when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.G	During the past 12 months, how often have you been at a relative's home when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
	23.H	During the past 12 months, how often have you been 'out and about' (e.g. via a mobile phone, iPod touch, blackberry etc.) when using the Internet? [Never, a few times a year, once or twice a month, at least once a week, almost every day, do not know/prefer not to say]
Competencies on the Internet	24.A	I know more about the Internet than my parents [Not true, A bit true, Very true, Do not know/prefer not to say]
	24.B	I know lots of things about using the Internet [Not true, A bit true, Very true, Do not know/prefer not to say]
	24.C	There are lots of things on the Internet that are good for children of my age [Not true, A bit true, Very true, Do not know/prefer not to say]
	25.A	Do you compare different websites to decide if information is true [Yes, No, Do not know/prefer not to say]
	25.B	Do you change filter preferences (e.g., change the way that your computer or Internet browser filters or selects which websites you can or cannot see) [Yes, No, Do not know/prefer not to say]
	25C	Do you bookmark a website (add to Favourites) [Yes, No, Do not know/prefer not to say]
	25D	Do you block unwanted adverts or junk mail/spam [Yes, No, Do not know/prefer not to say]
What you like to do on the Internet	26A	During the past 12 months, how often do you access the Internet for SOCIALIZING? Chat room (e.g., chat box, chatting in a site) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say A]
	26B	During the past 12 months, how often do you access the Internet for SOCIALIZING? Instant Messaging (e.g. MSN, ping, What's up) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say A]

26C	During the past 12 months, how often do you access the Internet for SOCIALIZING? Social networking sites (e.g, Facebook, COUNTRY SPECIFIC) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
26D	During the past 12 months, how often do you access the Internet for SOCIALIZING? E-mail [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
27A	During the past 12 months, how often do you access the Internet for PLAYING? Single player games (e.g., solitaire, backgammon) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
27B	During the past 12 months, how often do you access the Internet for PLAYING? Interactive games (e.g., War Craft) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
27C	During the past 12 months, how often do you access the Internet for PLAYING? Role-playing games (e.g., Dungeons and Dragons) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
27D	During the past 12 months, how often do you access the Internet for PLAYING? Games with monetary awards on the Internet [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
28A	During the past 12 months, how often do you access the Internet for RECREATION? Purchasing goods (e.g., from Amazon, E-bay) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
28B	During the past 12 months, how often do you access the Internet for RECREATION? Gambling (e.g., lottery, betting, casino) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
28C	During the past 12 months, how often do you access the Internet for RECREATION? Watching videos/ movies (e.g., you tube) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
28D	During the past 12 months, how often do you access the Internet for RECREATION? Making personal web-site/ blogging [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
29A	During the past 12 months, how often do you access the Internet for DOWNLOADING? Software [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
29B	During the past 12 months, how often do you access the Internet for DOWNLOADING? Movies [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
29C	During the past 12 months, how often do you access the Internet for DOWNLOADING? Music [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
29D	During the past 12 months, how often do you access the Internet for DOWNLOADING? Games [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
30A	During the past 12 months, how often do you access the Internet for OTHER REASONS? Doing homework/ research [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
30B	During the past 12 months, how often do you access the Internet for OTHER REASONS? Hobbies [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]

	30C	During the past 12 months, how often do you access the Internet for OTHER REASONS? News sites [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
	30D	During the past 12 months, how often do you access the Internet for OTHER REASONS? Sexual information [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
	30E	During the past 12 months, how often do you access the Internet for OTHER REASONS? Medical information (e.g., pregnancy prevention) [Never, A few times a year, Once or twice a month, At least once a week, Almost every day, Do not know/ Prefer not to say]
	31	My parents allow me to visit every website that I want. [Absolutely true, True Sometimes, true/ sometimes not true, Not true Absolutely not true]
	32	During the past 12 months, how many days per week do you use the Internet on average? [1 day per week, 2 days per week, 3 days per week, 4 days per week, 5 days per week, 6 days per week, 7 days per week, I use the Internet but not every week, Do not know/ prefer not to say]
	33.A	During the past 12 months, about how long do you spend using the Internet ON A NORMAL SCHOOL DAY? (EU Kids Online II Child Questionnaire April 2010 (Q305)) [Just a few minutes, About half an hour, About an hour, About an hour and a half, About two hours, About two hours and a half, About three hours, About three hours and a half, About four hours, More than four hours, None at all, Do not know/Prefer not to say]
	33.B	During the past 12 months, about how long do you spend using the Internet ON A NON-NORMAL SCHOOL DAY (weekends, holidays)? [Just a few minutes, About half an hour, About an hour, About an hour and a half, About two hours, About two hours and a half, About three hours, About three hours and a half, About four hours, More than four hours, None at all, Do not know/Prefer not to say]
	34	How often do your parents say that you are only allowed to go on the Internet until a certain time? [Never, Seldom, Sometimes, Quite often, Very often]
	35	During the past 12 months, have you used the Internet excessively to the extent of neglecting other activities? [No, Yes, Do not know/Prefer not to say]
	36.A	During the past 12 months, did you ever try to reduce the hours of Internet use? [No, Yes, Do not know/Prefer not to say]
Contact with other people	37.A	Have you ever had contact on the Internet with someone you have not met face to face before? (This could have been by email, chat rooms, social networking sites, instant messaging or gaming sites) (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q147)) [No, Yes, Do not know/Prefer not to say]
	37B	If yes, have you ever gone on to meet anyone face to face that you first met on the Internet in this way? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q148)) [No, Yes, Do not know/Prefer not to say]
	38	Face to face meetings with people that you first meet on the Internet may be fine or not fine. In the LAST 12 MONTHS have you gone to a meeting with someone you met in this way that bothered you? For example, made you feel uncomfortable, upset, or feel that you shouldn't have been there? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q152)) [No, Yes, Do not know/Prefer not to say]
	39	Have you seen ANYTHING of this kind in the PAST 12 MONTHS? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q128)) [No, Yes, Do not know/Prefer not to say]
SEXUAL CONTENT		

In the past 12 months, you will have seen lots of different images— pictures, photos, videos. Sometimes these might be obviously sexual—for example, showing people naked or people having sex. You might never have seen anything like this, or you may have seen something like this on the Internet.	40	How often have you seen these things on any websites in the PAST 12 MONTHS? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q129)) [Every day or almost every day, Once or twice a week, Once or twice a month, Less often, Do not know/Prefer not to say]
	41	Seeing sexual images on the Internet may be fine or may not be fine. In the LAST 12 MONTHS have you seen any things like this that have bothered you in any way? For example, made you feel uncomfortable, upset, or feel that you shouldn't have seen them. (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q134)) [No, Yes, Do not know/Prefer not to say]
	42	Thinking now about the LAST TIME this happened to you, how upset were you about what happened (if at all)? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q135)) [Very upset, Fairly upset, A bit upset, Not at all upset, Don't know]
CYBER BULYING	43	Has someone acted in this kind of hurtful or nasty way (teasing someone in a way this person does not like, leaving someone out of things, etc.) to you in the PAST 12 MONTHS on the Internet? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q112)) [No, Yes, Do not know/Prefer not to say]
	44	Thinking now about the LAST TIME this happened to you, how upset were you about what happened (if at all)? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q118)) [Very upset, Fairly upset, A bit upset, Not at all upset, Don't know]
	45A	Have you acted in a way that might have felt hurtful or nasty to someone else in the PAST 12 MONTHS? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q125)) [No, Yes, Do not know/Prefer not to say]
	45B	If yes, how often have you acted in this kind of way in the PAST 12 MONTHS? (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q126)) [Every day or almost every day, Once or twice a week, Once or twice a month, Less often, Do not know/Prefer not to say]
	46A	In the PAST 12 MONTHS, have you seen websites where people discuss ways of physically harming or hurting themselves (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q142A)) [No, Yes, Do not know/Prefer not to say]
	46B	In the PAST 12 MONTHS, have you seen websites where people discuss ways of committing suicide (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q142B)) [No, Yes, Do not know/Prefer not to say]
	46C	In the PAST 12 MONTHS, have you seen websites where people discuss ways to be very thin (such as being anorexic or bulimic) (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q142C)) [No, Yes, Do not know/Prefer not to say]

	46D	In the PAST 12 MONTHS, have you seen websites where people discuss hate messages that attack certain groups or individuals (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q142D)) [No, Yes, Do not know/Prefer not to say]
	46E	In the PAST 12 MONTHS, have you seen websites where people discuss talk about or share their experiences of taking drugs (EU Kids Online II Self-Completion Child 11-16 April 2010 (Q142E)) [No, Yes, Do not know/Prefer not to say]
OFFLINE BEHAVIOUR	48.01	How often do you find that you stay on-line longer than you intended? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.02	How often do you neglect household chores to spend more time on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.03	How often do you prefer the excitement of the Internet to intimacy with your partner? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.04	How often do you form new relationships with fellow on-line users? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.05	How often do others in your life complain to you about the amount of time you spend on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.06	How often do your grades or schoolwork suffer because of the amount of time you spend online? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.07	How often do you check your e-mail before something else that you need to do? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.08	How often does your job performance or productivity suffer because of the Internet? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.09	How often do you become defensive or secretive when anyone asks you what you do online? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.10	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.11	How often do you find yourself anticipating when you will go on-line again? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.12	How often do you fear that life without the Internet would be boring, empty, and joyless? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.13	How often do you snap, yell, or act annoyed if someone bothers you while you are on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.14	How often do you lose sleep due to late-night log-ins? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.15	How often do you feel preoccupied with the Internet when off-line, or fantasize about being online? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.16	How often do you find yourself saying "just a few more minutes" when on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.17	How often do you try to cut down the amount of time you spend on-line and fail? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.18	How often do you try to hide how long you've been on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]

	48.19	How often do you choose to spend more time on-line over going out with others? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
	48.20	How often do you feel depressed, moody or nervous when you are off-line, which goes away once you are back on-line? [Not applicable, Never, Rarely, Occasionally, Frequently, Often, Always]
Gaming	49	How many hours do you spend on average per weekday (Monday to Friday) playing computer games? _____ hours.
	50	How many hours do you spend on average per day playing computer games at the weekend/ on holiday/ on public holidays? _____ hours.
	51	How often are you playing computer games? [every day, 2-3 times per week, once per week, once per month, less than once per month, never]
	52	How long are you playing computer games? [less than 1 hour, 1-2 hours, 2-4 hours, 4-6 hours, more than 6 hours] (if one of the first 4 categories in 51 are ticked)
	53	How strongly are your thoughts involved with playing computer games? [not at all, somewhat, perceptibly, strongly, very] (if one of the first 4 categories in 51 are ticked)
	54	How often do you play computer games, although you resolved not to do so or did you play more often or respectively, longer than you had intended? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	55	Do you feel unwell when you cannot play computer games? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	56	Have you noticed that you have to play computer games more often or longer to enable you to feel good again or to feel relaxed? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	57	How strong is your average craving for playing computer games? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	58	How often does your craving for computer games appear so overpowering that you cannot resist it? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	59	How often do you avoid negative feelings (e.g., annoyance, boredom, frustration, sadness) by playing computer games? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	60.A	How often have you tried to give up or, respectively, to limit playing computer games? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	60.B	...if you have previously tried to change your online behaviour (ticked one of the last 4 categories in 60A) concerning playing computer games: were you successful? [Yes, No]
	61	How often have you forgotten something important (e.g., at work, school or training) because you have spent the whole time playing computer games? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
	62	How often have you had the feeling that you were playing computer games too much or too long? [never, seldom, sometimes, often, very often] (if one of the first 4 categories in 51 are ticked)
63A	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Problems at work, in training or at school (e.g., poorer assessment) [Yes, No] (if one of the first 4 categories in 51 are ticked)	

	63B	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Problems with the family/ partner or, respectively, with friends (e.g., quarrels) [Yes, No] (if one of the first 4 categories in 51 are ticked)
	63C	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Financial problems (e.g., debts) [Yes, No] (if one of the first 4 categories in 51 are ticked)
	63D	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Neglecting other leisure activities [Yes, No] (if one of the first 4 categories in 51 are ticked)
	63E	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Neglecting friends/ partner [Yes, No] (if one of the first 4 categories in 51 are ticked)
	63F	Have any negative consequences or problems arisen in the following sectors as a result of your computer game playing behaviour? Problems with health (e.g., too little sleep, nutrition) [Yes, No] (if one of the first 4 categories in 51 are ticked)
Gambling	64	During the past 12 months have you ever gambled in a real life gambling venue? [No, Yes, Do not know/Prefer not to say]
	65	During the past 12 months have you ever gambled through a gambling Internet site? [No, Yes, Do not know/Prefer not to say]
	66	In the past 12 months, how often have you gone back another day to try to win back money you lost? (If ticked yes in one of the questions 64 and 65) [Every time, Most of the time, Some of the time, Never]
	67	In the past 12 months when you were betting, have you ever told others you were winning when you really weren't winning? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	68	Has your betting money, in the past 12 months, ever caused any problems for you such as arguments with family and friends, or problems at school or at work? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	69	In the past 12 months, have you ever gambled more than you had planned to? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	70	In the past 12 months, has anyone criticized your betting or told you that you had a gambling problem, regardless of whether you thought it was true or not? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	71	In the past 12 months, have you ever felt bad about the amount you bet, or about what happens when you bet money? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	72	Have you ever felt, in the past 12 months, that you would like to stop betting money but didn't think you could? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	73	In the past 12 months, have you ever hidden from family or friends any betting slips, IOUs, lottery tickets, money that you've won, or other signs of gambling? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	74	In the past 12 months, have you had money arguments with family or friends that centered on gambling? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	75	In the past 12 months, have you borrowed money to bet and not paid it back? (If ticked yes in one of the questions 64 and 65) [Yes, No]
	76	In the past 12 months, have you ever skipped or been absent from school or work due to betting activities? (If ticked yes in one of the questions 64 and 65) [Yes, No]
77	Have you borrowed money or stolen something in order to bet or to cover gambling debts in the last 12 months? (If ticked yes in one of the questions 64 and 65) [Yes, No]	

Life satisfaction	78.A	How satisfied are you currently with your school achievements? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110A)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]
	78.B	How satisfied are you currently with how much fun you have? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110B)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]
	78.C	How satisfied are you currently with your family? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110C)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]
	78.D	How satisfied are you currently with your friends? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110D)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]
	78.E	How satisfied are you currently with your spare time activities/hobbies? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110E)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]
	78.F	How satisfied are you currently with your life in general? (SAFT Survey Norway 2006; Pen and paper survey questionnaire (English) for children (Q110F)) [Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, Very dissatisfied, Prefer not to say]

Table A.18. List on indicators on ICT in the survey on equipment and use of information and communication technologies in homes

Relevant variables household		
Topic	Code	Label
Block I: Identification	Sex, age, nationality, place of birth, studies, employed, net income, number of persons in household	
Block II: Equipment of the main house in information and communication technology products	ORD	Computer availability
	TELEV	Television at home
	TELEF1	Landline phone (wireless included) at home
	TELEF2	Some resident of the house has a mobile phone
	RADIO	Radio at home
	MUSICA	Musical chain, hi-fi system or laserdisk
	MP3	Any member of the household has mp3 or mp4
	VIDEO	Video at home
	DVD	DVD or similar (Blue-Ray, eg) at home
	EBOOK	E-book reader at home
	TABLET	Tablet
Block III: Access to Internet	VIV_INTER	It has Internet access at home
	INTEFOR1	Type of broadband Internet connection at home = (ADSL, cable network, fiber, public WIFI...)
	INTEFOR2	Type of broadband Internet connection at home = (mobile hand device, via USB modem or card)
	INTEFOR3	Type of Internet connection at home = Modem/ISDN
	INTEFOR4	Type of Internet connection at home = Mobile connection of b. narrow
	NOINT1	Reason for not having Internet connection at home = access from other places
	NOINT2	Reason for not having Internet connection at home = they do not need
	NOINT3	Reason for not having Internet connection at home = high equipment costs
NOINT4	Reason for not having Internet connection at home = high connection costs	
NOINT5	Reason for not having Internet connection at home = little knowledge of use	
NOINT6	Reason for not having Internet connection at home = security, privacy	
NOINT7	Reason for not having Internet connection at home = broadband not available in area	
NOINT8	Reason for not having Internet connection at home = other reasons	
Block V: Mobile and Internet use	TIMOVIL	Have a mobile phone
	USO_INT	Have you ever used the Internet?
	ULT_INT	When was the last time you used the Internet?
	FREC_INT	Internet use frequency (last 3 months)
	VINTD	Using the Internet several times a day
	TFMOV	Using a mobile phone to Access the Internet outside home or work
	PORTMOV	Using a laptop to access Internet outside home or work
TABMOV	Using a Tablet to access Internet outside home or work	

	ODMOV	Using other devices to Access Internet outside home or work
	SERV16_1	Internet service used: email
	SERV16_2	Internet service used: telephoning over the Internet (use of Whatsapp, Messenger, Viber)
	SERV16_3	Internet service used: participate social networks
	SERV16_4	Internet service used: instant messaging (via Skype, Messenger, WhatsApp, Viber)
	SERV17_1	Internet service used: reading news, newspapers, magazines on-line.
	SERV17_2	Internet service used: Finding Information about health issues
	SERV17_3	Internet service used: search for information on goods and services
	SERV18_1	Internet service used: issuing opinions on civic or political matters on Internet sites
	SERV18_2	Internet service used: take part in online consultations on civic or political matters
	SERV19_1	Internet service used: looking for a job
	SERV20_1	Internet service used: sales of goods and services
	SERV20_2	Internet service used: electronic banking
	SERV20_3	Internet service used: upload own content
	SERV20_4	Internet service used: listening to music
	SERV21_1	Internet service used: take an online course
	SERV21_2	Internet service used: use online learning material
	SERV21_3	Internet service used: communicate with monitors or students using educational websites
	SERV21_4	Internet service used: Other Internet learning activities
	ALMINT	Use of storage space on the Internet to save files
	EQUIPHO	Home equipment or household appliances connection through the Internet
Block VI: Use of shared economy services	APPCA1	Using web pages or specialized apps to arrange accommodation last 12 months
	APPCA2	Use other web pages or apps to arrange accommodation last 12 months
	APPCT1	Use web pages or specialized apps to arrange transport last 12 months
	APPCT2	Use other web pages or apps to arrange transport last 12 months
	TRABWEB	Find work via web or app last 12 months
	INGTRW	Earnings from work, main or additional source
Block VII: Electronic administration	INTERAP1	Forms of contact or interaction with the public administration in the last 12 months: information on web pages
	INTERAP2	Forms of contact or interaction. with the public administration in the last 12 months: download official forms
	INTERAP3	Forms of contact or interaction. with the public administration in the last 12 months: send form. completed
	PRESFOR	Need to submit official forms in the last 12 months

	NOENVAP1 NOENVAP2 NOENVAP3 NOENVAP4 NOENVAP5 NOENVAP6	Reasons for I do not send forms to the public administration in the last 12 months: service not available Reasons for I do not send forms to the public administration in the last 12 months: lack of knowledge Reasons for I do not send forms to the public administration in the last 12 months: data security protection Reasons for I do not send forms to the public administration in the last 12 months: no signature or electronic certificate Reasons for I do not send forms to the public administration in the last 12 months: processing by other. Person in my name Reasons for I do not send forms to the public administration in the last 12 months: other reasons
Block VIII: Security and confidence	PROBSEG1	Fraudulent use of credit / debit cards
	PROBSEG2	Loss of documents, photos, or other data due to a virus or other computer infection
	PROBSEG3	Misuse of your personal information available on the Internet
	PROBSEG4	Your social network or email account has been hacked
	PROBSEG5	Online identity theft
	PROBSEG6	Receive fraudulent messages
	PROBSEG7	Being redirected to fake websites that request personal information
	PROBSEG8	Children's access to inappropriate web pages
	ROBIDENT	Financial loss for identity theft
	LIMINT1	Buy or order goods or services
	LIMINT2	Electronic banking
	LIMINT3	Providing personal information to social or professional networking services
	LIMINT4	Communicate over the Internet with public administrations
	LIMINT5	Download software or apps, music, video files, games
	LIMINT6	Using the Internet via public WiFi
	LIMINT7	Other activities
	COPISEGUR	File backup
SOFSEG	Use of security software	
CONFINT	Internet confidence level	
Block IX: computer knowledge	TMOR1	Mobile and computer related tasks: transfer files between the computer and other devices
	TMOR2	Mobile and computer related tasks: software or applications (apps)
	TMOR3	Mobile and computer related tasks: change the settings of any software
	TAREAINF1	Computer tasks performed: copy or move files or folders
	TAREAINF2	Computer tasks performed: use a word processor
	TAREAINF3	Computer tasks performed: create presentations or documents that integrate different files
	TAREAINF4	Computer tasks performed: use spreadsheets
TAREAINF4_1	Computer tasks performed: use advanced spreadsheet functions (sort, filter, ...)	
TAREAINF5	Computer tasks performed: use software to edit photos, video or audio	
TAREAINF6	Computer tasks performed: programming in a programming language	
Block X: eCommerce	COMPRAS	Internet shopping
	ULT_COM	When was the last time you bought online?

PROD1	Products / services purchased on the Internet (last 12 m.): Food and other cons. not durable
PROD2	Products / services purchased on the Internet (last 12 m.): Household goods
PROD3	Products / services purchased on the Internet (last 12 m.): Medicines
PROD4	Products / services purchased on the Internet (last 12 m.): Movies, music
PROD5	Products / services purchased on the Internet (last 12 m.): Books, magazines, newspapers
PROD6	Products / services purchased on the Internet (last 12 m.): Online training material
PROD7	Products / services purchased on the Internet (last 12 m.): Sports equipment, clothing
PROD8	Products / services purchased on the Internet (last 12 m.): Computer games or game consoles
PROD9	Products / services purchased on the Internet (last 12 m.): Another computer software
PROD10	Products / services purchased on the Internet (last 12 m.): Computer equipment
PROD11	Products / services purchased on the Internet (last 12 m.): Electronic equipment
PROD12	Products / services purchased on the Internet (last 12 m.): Services. of telecommunications
PROD13	Products / services purchased on the Internet (last 12 m.): Holiday accommodation
PROD14	Products / services purchased on the Internet (last 12 m.): Other travel services
PROD15	Products / services purchased on the Internet (last 12 m.): Tickets for shows
PROD16	Products / services purchased on the Internet (last 12 m.): Other products or services
DESCARGA1	Downloads via website: movies, music
DESCARGA2	Downloads via website: electronic books
DESCARGA3	Downloads via website: digital magazines or newspapers
DESCARGA4	Downloads via website: ord. and video consoles
DESCARGA5	Downloads via website: computer software
VENDEDOR1	Internet seller (last 12 months): national
VENDEDOR2	Internet seller (last 12 months): another EU country
VENDEDOR3	Internet seller (last 12 months): from the rest of the world
VENDEDOR4	Internet seller (last 12 months): from unknown country of origin
NCOMPRAS	Number of times you have bought online (last 3 months)
VCOMPRAS	Approximate value of purchases (last 3 months)
PRCOMP	Existence of problems when buying / ordering goods or services. through the Internet (last 12 months)
PRCOMP1	Problems electronic commerce last 12 months: technical failures pag web
PRCOMP2	Problems electronic commerce last 12 months: : inf. difficulties guarantee
PRCOMP3	Problems electronic commerce last 12 months: delivery delays
PRCOMP4	Problems electronic commerce last 12 months: final costs higher than those indicated
PRCOMP5	Problems electronic commerce last 12 months: faulty deliveries
PRCOMP6	Problems electronic commerce last 12 months: fraud
PRCOMP7	Problems electronic commerce last 12 months: probls. in claims and compensation
PRCOMP8	Problems electronic commerce last 12 months: vend. extr. they do not take orders in Spain
PRCOMP9	Problems electronic commerce last 12 months: other problems

AFININT1	Financial activities through Internet: buy or sell stocks, bonds, etc.
AFININT2	Financial activities through Internet: subscribe or renew insurance policies
AFININT3	Financial activities through Internet: formalize a loan or have a credit
NOCOMP1	Reasons for not buying online (last 12 months): prefers physical store
NOCOMP2	Reasons for not buying online (last 12 months): lack of knowledge
NOCOMP3	Reasons for not buying online (last 12 months): problematic delivery
NOCOMP4	Reasons for not buying online (last 12 months): privacy and security
NOCOMP5	Reasons for not having bought on the Internet (last 12 months): lack of trust (receipt, return, ...)
NOCOMP6	Reasons for not buying online (last 12 months): no payment card available
NOCOMP7	Reasons for not having bought on the Internet (last 12 months): they do not take orders in Spain
NOCOMP8	Reasons for not buying online (last 12 months): Someone else did it for me
NOCOMP9	Reasons for not buying online (last 12 months): other reasons

Relevant variables child		
Type	Code	Label
Identification	SEXO_N1	Sex
	EDAD_N1	Age
Block IV: Computer and Internet use by children	PCN1	Computer use (last 3 months)
	INTN1	Internet use (last 3 months)
	LUGARINTN1_1	Place of use (last 3 months) = household
	LUGARINTN1_2	Place of use (last 3 months) = another household
	LUGARINTN1_3	Place of use (last 3 months) = Study center
	LUGARINTN1_4	Place of use (last 3 months) = Public center
	LUGARINTN1_5	Place of use (last 3 months) = cybercafé
	LUGARINTN1_6	Place of use (last 3 months) = other places
	MOVILN1	Mobile phone

Table A.19. List on indicators on ICT in the family budget survey

Relevant variables household		
Topic	Code	Label
Demographics	Geographic characteristics, municipality size, population density, residence area, country of birth of each member, nationality, level of education, type of household [without children, with children, etc.], and income	
Type of spending	08.	Communications
	09. 09.1.3 09.1.3.1. 09.1.3.2. 09.1.3.3. 09.1.3.4. 9.1.4. 09.3.1. 09.3.1.1.	Leisure and culture Information processing equipment: Personal computers, monitors, printers, multifunction equipment and various accessories. Software packages such as operating systems, applications, programming languages, etc. Calculators, including pocket calculators Typewriters and word processors Purchase of materials made by households with the intention of making repairs themselves Support for the recording of image, sound, and data Games, toys, and hobbies Electronic games, video games (devices and cartridges), games computer to be plugged into television, video game software, video game cassettes and video games CD-ROM

Table A.20. List on indicators on ICT in the sociological research center: consumer confidence index

Relevant variables individuals		
Topic	Code	Label
Demographics		Gender, age, municipality, nationality, Spanish level of knowledge, country of birth, province, habitat size, income, employment, level of education
Acquisition	B.1.1.3.	In the last six months, have you or any member of your household acquired any of the following assets? [Computer]

Table A.21. List on indicators on ICT in the statistics of the information and communication society in non-university educational centers

Relevant variables school		
Topic	Code	Label
Identification		Region, municipality size, type of center (School, high school, vocational training, etc.), school departments, total teachers, total students
Computer equipment	-	Type of computer [desktop computer, laptop, and tablets]
	-	Location [computer room, classroom, administration, other]
	-	Computer use tasks [administrative tasks, teacher tasks, student centred tasks, other]
	-	Number of computers for students with connection
	-	Number of computer rooms
Internet connection	-	Whether the centre has o no Internet connection [Direct form o thought the community region]
	-	Type of connection [RDSI, ADSL, fibre optic, network over cable, mobile data (LTE, 3G, 4G, 5G), others (radio, FR, etc.)]
	-	Bandwidth (less 2 Mbps, from 2 Mbps to 10 Mbps, from 10 Mbps to 20 Mbps, from 20 Mbps to 50 Mbps, from 50 Mbps to 100 Mbps, more 100 Mbps]
Wi-Fi connection	-	Whether the centre has o no Wi-Fi connection. If they have Wi-Fi connection, the survey asks if they have access to the intranet
	-	Places with Wi-Fi access [departments, administration, common zones]
	-	People with Wi-Fi access [students with center devices or students with their own devices]
Rooms	-	Number of classrooms equipped with interactive digital systems
	-	Number of classrooms with Internet access
Webpage	-	Whether the center has website
Virtual learning environment	-	Whether the center has a virtual learning environment
	-	Provider of the virtual learning environment [center, administration, etc.]
	-	Type of user in the virtual learning environment [students, families]
Cloud services	-	Whether the center has cloud services
	-	Provider of cloud services [center, administration, etc.]
	-	Type of user in the cloud service [students, families]
Projects	-	Whether the center participates in projects related with new technologies at an autonomous, national or international level
Mobile phone	-	Mobile phone for educative purposes.

Table A.22. List on indicators on ICT in the Understanding Society survey

Relevant variables household		
Topic	Code	Label
ICT indicators: Computer and Computing	hhpc1	Desktop computer
	hhpc2	Laptop computer
	hhpc3	Netbook computer
	hhpc4	Tablet computer
	hhpc5	Other
	hhpc96	None of the above?
	hsnet1	Access to Internet - home computer
	hsnet2	Access to Internet - digital tv
	hsnet3	Access to Internet - mobile phone
	hsnet4	Access to Internet - other
	hspc	IC: Household has home computer
	hswpc	Type of computer in household
	pcmodm	Does computer have fax/modem
	pcnet	has access to the Internet from home
	pcuse1	Computer use: paid work
	pcuse2	Computer use: voluntary work
	pcuse3	Computer use: educational work
	pcuse4	Computer use: playing games
	pcuse5	Computer use: word processing
	pcuse6	Computer use: financial accounts
	pcuse7	Computer use: other
	pcuses	Computer user: frequency
	pcusr1	Computer user: 1st mentioned
	pcusr2	Computer user: 2nd mentioned
	pcusr3	Computer user: 3rd mentioned
	pcusr4	Computer user: 4th mentioned
	pcusr5	Computer user: 5th mentioned
	pcusr6	Computer user: 6th mentioned
	pcwhen	When was computer acquired

Relevant variables individuals		
Topic	Code	Label
ICT indicators: Computer and Computing	ideviceused	Device used for first accessing individual interview
	mobcomp	has a mobile computing device
	netuse	regularly uses Internet
	pcofn	Computer use: How often
	pcuse	Ever use a computer at home
	pcusea	Computer use: Paid work
	pcuseb	Computer use: Voluntary work
	pcusec	Computer use: Educational work
	pcused	Computer use: Playing games
	pcusee	Computer use: Word processing
	pcusef	Computer use: Financial accounts
	pcuseg	Computer use: Connect to Internet
	pcuseh	Computer use: Hobbies
	pcusei	Computer use: Other
	pcusem	Computer use: Most important reason
scrf1	Didn't like computer	
soccont	consent to contact via social media	

Relevant variables youth		
Topic	Code	Label
ICT indicators: Computer and Computing	ypcintnt	how often do you use the computer at home for connecting to the Internet, inc
	ypcomp	ever use a computer at home?
	ypconsol	games console (such as playstation, x-box or wii) in home
	ypconstm	how many hours do you spend playing games on a games console on a normal school day
	ypcpgs	how many hours do you spend using the computer at home for playing games
	ypfpc	frequency of home computer use
	ypfpcart	use a computer to create original artworks or animation
	ypfpcgm	frequency of playing computer games
	yppcg	how often play games on the computer
	yppchw	how often use pc for home/course work
	yppcnt	how often use pc for net/send e-mail
	ypsmartph	Is your mobile a smartphone? A smartphone is a mobile phone that can download
	ypnetcht	Hours using social media on weekdays



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