



Digital Transition: Children in a Multimodal World

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Abstract. With the Internet's omnipresence in both private and public spaces, children grow up immersed in a connected, multimodal, open world. The rise of Facebook and YouTube (i.e. the interactive, so-called web 2.0 platforms emerged in 2004–2005) led to the World Wide Web colonizing our everyday lives: we might call this phenomenon a digital transition. Meanwhile, after 2012, the pervasiveness of mobile technologies has enabled a broader access to online spaces across generations, geographies, gender and social status. The present research note aims at contextualizing preliminary findings of a qualitative study on digital literacy, conducted among children aged 6–8 in a school from a central Romanian small town.

Keywords: digital literacy, children aged 6–8, Romania

Digital literacy of young children: a local study in the European context

Over the last decades, technological development has led to a paradigm shift in the communication landscape. Multimedial or multimodal spaces brought about by online platforms – audio, video, and/or text-based, synchronous and asynchronous channels of communication – have widened the choice of self-expression, learning, playing, and work. A major shift in our lifestyles has occurred since Tim O'Reilly (2005) popularized the term web 2.0 standing for a multimodal, interactive cyberspace, designed as an architecture of participation. The 'digital turn' (Westera 2013: 141) brings about major transitions in the ways we acquire and store knowledge, the tools and channels of socializing, dating, or gaming. The term 'digital transition' encompasses the vast array of social, economic, and cultural transformations enabled by smart mobile technologies, more and more affordable for individuals and organizations. Digital transition is an organic part of the social transition described by Castells (2010) as the rise

of a network society. ‘Multimodality’ is a generic term used by linguists and communication theorists to mark the various channels of human messaging, from verbal or non-verbal to written texts, rebranded by information technology researchers to express this variety enhanced by the interactive World Wide Web (LeVine and Scollon 2004).

Given the increasing mobility due to devices such as smartphones, tablets, and wearable technologies, texts are produced and read across a range of spaces and involve a variety of networks, and this has brought about significant changes in everyday literacy practices (Arrow and Finch 2013; Avgerinou and Petersson 2011; Plowman, Stevenson, Stephen and McPake 2012; Smeets, Van Dijken and Bus 2012). The implications of this dynamic change for young children have not been examined in depth yet (Bakó and Tőkés 2015b, Marsh 2015).

Research aimed at exploring children’s and youth’s digital literacy has only been carried out since 2010 in a more systematic and comparative way, although the use of digital technologies as educational tools date way back in the mid-1990s. From innovative educational methods, ICTs have become major sources and channels of learning for the young generations. With the Internet providing a wealth of information for entertainment and learning, children and young people use online spaces on a daily basis. Their level of digital skills and competences measured along online behaviour across Europe – on a scale from 0 to 10 – shows significant differences between Romanian and other European kids. Although the European and the Romanian average scores for the diversity of online activities are similar, for specific online competences and the trust in such competences, European children perform better than their Romanian peers, as shown in *Table 1*.

Table 1. *Digital competences of Romanian children in European context (2010)*

Measurement scale 0–10	Specific online competences	Diversity of online activities	Trust in online competences
European average	5.19	4.67	6.35
Romanian average	4.26	4.69	5.96

Source: Tőkés and Velicu 2015b: 440

Based on previous studies carried out in several European Union (EU) countries and the United States (Holloway, Green, and Livingstone 2013; Mascheroni and Cuman 2014; Rideout 2013), we started up an exploratory qualitative research aimed at mapping the digital literacy of children aged 4 to 8 years old in a kindergarten from Western Romanian city Cluj-Napoca and in an elementary school in Sfântu Gheorghe town, situated in central Romania. Funded by the Institute for Research Programmes of the Sapientia Foundation from 1 March 2015 to 31 July 2016, the inquiry is part of the EU COST Action IS1410 involving similar endeavours from over 30 countries (COST 2014). Our local results will be

thus compared and contrasted with European researchers' data and conclusions, based on a common frame of reference and interpretation developed in a white paper (Sefton-Green, Marsh, Erstad, and Flewitt 2016).

The present research note is focusing on the preliminary results of the inquiry conducted among children aged 6 to 8 years old from a preparatory class in a small town.¹ Final analysis will include, in mid-July 2016, both kindergarten and school children under scrutiny.

Why and how to study young children's digital literacy?

The process of social change in family life, digital transformations, and the growth of a schooled society have deeply impacted children's lives (Sefton-Green et al. 2016). Despite the digital transition or the shift to a 'web-life' (Ropolyi 2014: 9), the landscape of access, skills, and understanding the Internet is fractured in Europe, with digital divides concerning frequency and quality of connectivity occurring mainly among the rich and the poor. As Sefton-Green et al. (2016: 3) contend:

Whilst it is true that a child born in any affluent city in Europe in 2015 may come from a family immersed in digital technology, constantly connected to the Internet with every member of the household possessing a smart phone, tablet, with PCs, smart televisions in the home and schools awash with smart boards, 100% Wi-Fi coverage and so forth, we also know they will have classmates with very different experiences of the digital. Less affluent families may well only have access to the Internet via a smart phone, of which there may be only one in the household and reliant on precarious pay-as-you-go tariffs. For that child, school may be the portal to the digital century.

Children are engaged in reading, writing, and multimodal authoring across a range of screen-based media in homes and communities. The differences due to socio-economic status and family histories are worth exploring despite their vulnerable age and hardship to access their worlds in multiple contexts. In kindergartens and schools, well-designed tools and methodologies can facilitate children's learning in an interactive way. Young children's play with new technologies is crucial for enabling them to rehearse social practices of digital literacy for real-life situations (Bakó and Tőkés 2015b; Burke and Marsh 2013; Grimes and Fields 2012; Holloway, Green, and Livingstone 2013).

1 Preparatory classes are aimed at socializing children to school before entering the 1st grade in Romania.

Our qualitative inquiry was aimed at exploring the following issues:

- a) The use of ICTs² by 4- to 8-year-old Romanian children (location, duration, activities);
- b) The level of digital literacy of 4- to 8-year-old Romanian children;
- c) Favourite technologies, platforms, and applications of 4- to 8-year-old Romanian children;
- d) Attitudes of 4- to 8-year-old Romanian children toward ICTs.

Our methodological framework is based on a small-scale qualitative inquiry carried out in an affluent city's working-class kindergarten and a small town's middle-class elementary school.

Data was gathered from four key sources:

- a) participant observation and discussion with children using tablets (20–25);
- b) interviews with kindergarten and school teachers (4–5);
- c) interviews with parents (10–15);
- d) visual research: analysis of photos taken and children's drawings (20–25).

We have been asked at several conferences why the limitation to 4-year-olds in kindergarten and why not involve children starting from the 3-year-olds, this age marking an important shift in psychological development in terms of language use, capacity of self-expression, independence, and mobility. The answer is not only for convenience sampling – children from the middle groups are aged above four – but also for gathering more content-rich information in a limited timeframe, given the short amount of time available for our exploratory study (16 months only, due to small grant-funding requirements).

After the first, pilot data gathering, we have been also asked at conferences why not give a standard set of tools and techniques for children's' drawings for better comparable results? In our pilot study, we let the children choose their own technique and paper size. Indeed, works done in watercolour, though very artistic, were more difficult to decipher and subject to content analysis. In contrast, using the most familiar technique with children – coloured pencils – turned out to be both more detailed and appropriate in depicting imagery. We used these tools further on during our data gathering, and used standard A4-sized paper.

Another key issue was the controversial concept of 'digital literacy', how to define it and how to assess it? There is a growing body of research on this topic, ranging from a broad, overarching definition of digital literacy – including knowledge, skills, and attitudes alike – to a narrow, more instrumental, functionalist approach, focused mainly on skills (Rosen, Cheever, and Carrier 2015; Tőkés and Velicu 2015a). The European Commission uses the term 'digital competence' for the narrower sense and defines it as follows:

2 Information and Communication Technologies.

Digital competence involves the confident and critical use of information society technology (IST) for work, leisure, learning and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, access, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet (DG CONNECT F4 2014: 3).

Meanwhile, the EU-wide digital literacy research project (COST 2014) defines and assesses this key-term on three levels (Sefton-Green et al. 2016):

a) Operational level: abilities related to the use of ICTs and informational content;

b) Cultural level: the process of decoding the significance of the operational level;

c) Critical level: the selective, flexible, and creative adaptation of ICTs.

Our inquiry used the broader concept of digital literacy, including not only what and how can a 4- to 6-year-old kindergarten child or a 6- to 8-year-old preparatory school kid perform with a tablet but also the way s/he understands technology, the language – both verbal and visual – used in relation to their digital worlds and the creative processes it involves.

What do we know of children's digital literacy? A literature review

Our research team's MA student members³ were instrumental in carrying out a thorough literature review of studies concerning digital literacy among children and young people, issued in Romania from 2005 to 2015 in mainstream journals.⁴ Out of a list of 55 journals compiled by the research group coordinator, students created a database of 7,922 articles, among which – using search words for titles – we depicted those related to the Internet (241 articles) and those concerned with children's online behaviour: seven articles only. Despite the overwhelming role Internet plays in our lives since platforms like Facebook (2004) or YouTube (2005) have emerged and mobile technologies took over (2012), research on these topics is still too scarce.

With the growing body of research on children's online behaviour and their digital literacy, there is still a long way to go in contextualizing and actualizing inquiries on this topic. As broadband Internet access has become available in a fast pace to over 80% of the population in Romania (*Table 2*), parents and educators are likely to be more interested in understanding children's digital lives.

3 Mária Csíki, Boglárka Lovász, and Hunor Szőcs.

4 We defined 'mainstream journals' those indexed in databases and acknowledged as such by the Romanian Council for Research in Higher Education (CNCS).

Table 2. *Broadband Internet penetration rate in Romania (per 100 inhabitants) (2012–2015)*

Reference date	Broadband Internet	Mobile broadband
31.12.2012	50.4	35.5
30.06.2013	56.2	41.1
31.12.2013	68.2	48.0
30.06.2014	72.2	52.4
31.12.2014	81.1	60.2
30.06.2015	84.7	64.2

Source: ANCOM (www.ancom.org.ro)

Summarizing the richer international literature and the scarce local research on children and youth digital literacy and online behaviour, we may conclude as follows:

a) The importance of this topic is acknowledged across several disciplines: psychology, sociology, pedagogy, and communication studies (Holloway, Green, and Livingstone 2013; Mascheroni and Cuman 2014; Rosen, Cheever, and Carrier 2015);

b) The level of children's digital skills vary across age, economic status, residence, and cultural capital: the younger, poorer, rural, and working-class children are less skilled (Bakó 2015; Sefton-Green et al. 2016; Tőkés and Velicu 2015a);

c) Parents are disconnected from their children's online lives although they assist to it (Arrow and Finch 2013; Vinter 2012);

d) Educators are searching for new ways to integrate ICTs in their daily practices in order to catch up with the children's learning needs (Arrow and Finch 2013; Avgerinou and Pettersson 2011; Smeets, Van Dijken, and Bus 2012).

Digital literacy of children aged 6 to 8 years old: preliminary results

After analysing a body of 34 drawings,⁵ five participant observations with children using tablets, and six interviews – three carried out with educators and three with parents –, we found that all children under scrutiny had daily access to smart mobile technologies at home (phones and/or tablets), most of them with

5 Children made drawings two times: first time on the general topic of the Internet (June 2015), with techniques of their choice, and secondly on the topic of *Computers, tablets, mobile phones, and me* (November 2015), with coloured pencils. Out of 26 children, only 17 children's drawings were included in the research – of those whose parents signed the informed consent agreement form.

strict parent supervision in terms of screen time. Only one child out of 17 was let free to use his tablet whenever he felt so. When asked how they learned to use their smart devices, children answered they were guided by an older brother or sister or cousin, not by parents. When testing the Samsung Galaxy Note 10.1 (2014 Edition) used for the purpose of an enhanced user experience during our research, children have noted that although they have daily access to a tablet at home, it is smaller (7”), slower, and of poorer quality of display. They also complained about the slow download speed of games when they played at home.

All 17 children participating in the research were happy and keen to draw, test the tablet, and talk about their device use. Some of them (three children) even expressed their curiosity on the research details, and wanted to open a discussion on why are we, adults, curious about their way of using tablets and the Internet. All children found the browser and the Google Play Store at once, and asked permission to download a favourite game. All of them understood what an e-mail is and which application should be used for it, although they noted that had never tested it. As expected, all children tested used mobile devices for entertainment purposes mainly and were allowed to play downloaded games at home. Most of them used their parents’ devices – only one child had his own tablet available “whenever I wanted to, except when a friend was coming by – mom told me it is impolite to use it when I have visitors” (boy, 7).

As for the drawings, children depicted a world of a family life immersed in smart devices – tablets and mobile phones. Compared to a pilot study carried out in 2013 in the same school among 2nd and 3rd graders, with a corpus of 128 drawings on the topic *My Family and the Internet*, we can detect a major shift from the desktop world to the tablets and mobile phones or laptops. While in 2013 the iconic drawing for the Internet was the desktop in the middle of the room, placed like an altar, with children and parents on the sides,⁶ in 2015, desktops are almost absent from children’s drawings. Although decoding children’s drawings is a complex process, discussing with them and seeing their world both through visual and verbal narratives can give important clues (Anning and Ring 2004, Leitch 2008).

Parents expressed their concerns over their perceived low level of digital skills, and were more worried about their children’s screen time than about the content they might access online. They were also worried about an unhealthy, static lifestyle that digital technologies bring about. At a meeting with all parents, when we talked about their concerns over the recent switch to digital textbooks in Romania, they considered such educational materials useful, but they considered a blended learning environment – with the mixed use of digital and classical books – more instrumental for children.

The interviewing teachers – all working with 6- to 8-year-olds – expressed their concerns over their lack of digital literacy and their difficulties in catching

6 See the sidebar picture of our research team’s blog: <https://digilit2015.wordpress.com/>.

up with the students' learning needs. They considered necessary to participate in trainings to develop such skills, and were keen to practise more in order to enhance their digital literacy. They also noted that the Net Generation is more difficult to keep interested in class due to a narrower attention span.

Conclusions and way forward

Although defining and assessing digital literacy is a debated topic for policy and research alike, there is a broad consensus on its importance and the different levels of analysis (DG CONNECT F4 2014, Sefton-Green et al. 2016).

Our preliminary results on 17 children aged 6 to 8 years old regarding tablet use, completed with participant observation and discussions with kids as well as interviews with three teachers and three parents, have led us to conclude that children are relaxed about smart device use, have a daily experience of it, and are immersed in multimodal technological environments through gaming, but when it comes to understanding opportunities and risks they prove to be mainly narrow routine users.

Meanwhile, parents are rather stressed about their need to catch up with the children's level of digital competence, and try to limit device use at least in terms of screen time, but are less concerned with children's online content consumption or security risks. On their part, educators would be keen to integrate ICTs in a blended learning environment if provided with training for a competent use of smart devices.

For a fine-tuned inquiry, further data needs to be gathered, and a comparative analysis with similar European research projects should be carried out in 2017. Broadening the research framework from small-scale approach and direct stakeholders (children, parents, and teachers) to policy makers, the gamer industry and other parties involved in children's web-life are likely to follow: it is a digital transition for us all.

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