MOBILE CHILDREN, YOUNG PEOPLE AND TECHNOLOGY PROJECT

AN EXPLORATORY STUDY OF MOBILE CULTURES' USE OF DIGITAL TECHNOLOGY AND NEW MEDIA FOR LIVING AND LEARNING

The Scottish Government
Riaghaltas na h-Alba

STEP
SCOTTISH TRAVELLER EDUCATION PROGRAMME

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INTRODUCTION

The digital agenda is an ever-growing initiative with technology being lauded as creating open access education and the autonomous and empowered learner. Innovative technology, software, and devices such as iPads and smartphones have revolutionised family life and learning (e.g. Grant, 2009; Hague and Payton, 2010; Plowman et al. 2010; Scottish Government 2015). Digital technology is fast becoming more accessible to a wider population as it becomes more affordable (Greaves et al. 2010), portable (Bahr et al. 2012) - with ever expanding and improving wireless connectivity.

Despite the proliferation of digital technology, the reality of digital participation and a networked society is that access and connectedness is fragmented. West (2015) suggests that 4.2 billion people are not part of the digital revolution. Many children and young people have limited access to the internet and online opportunities, and even in populations where access is high, research has shown poor breadth and depth of use (Elwick et al. 2013; Livingstone and Helsper, 2007; Sutcliffe 2010). For example, individuals with higher incomes are most active in e-commerce, are more likely to use the Internet to compare products, pay bills, and use banking services (Hargittai and Walejko, 2008); and those with higher Socioeconomic Status (SES) gain more material benefits from internet use than individuals from lower SES (van Deursen and Helsper, 2015). Young people from higher socioeconomic families have been shown to be the primary creators of web content (Hargittai and Walejko, 2008) and children and young people from lower income families are far less likely to use the internet for school work or complete homework (Elwick et al. 2013). These findings suggest that socio-demographic characteristics shape the use of digital technology, information production and integration of the internet into everyday life and work (Dutton and Blank, 2011; Helsper and Reisdorf, 2016). In the absence of quality access or digital skills fit for employment and 21st century living and learning, some argue that school leavers may struggle to find jobs and end up socially excluded.

Children and young people from mobile communities[1] face ongoing barriers to accessing and achieving in Education, including poor literacy, limited resources, varied internet access, through interrupted learning, and unpredictable patterns of mobility (Estyn, 2011; Padfield, 2008; Padfield and Cameron, 2009). For these groups in particular, digital technology has the potential to be transformational. Digital technology can support home-school links (Hague and Payton, 2010; Somekh et al. 2002), help access and increase learning opportunities when travelling, improve communication with schools and educators (Pearson), and create networks to support learning and development. Furthermore, its multimodal nature (Kress, 2010) resonates with mobile communities' cultural traditions of, for example, storytelling, real-world and situation-based learning, and customary modes of expression, which are deeply embedded in the visual, oral, practical and material (see appendix 2 for summary table).

However, with the exception of occasional anecdotes about mobile families' use of digital technology, there is little empirical evidence on the current landscape or national trends of young people from mobile communities' use of digital technology. In addition, there are inherent challenges pertaining to accessing large samples of mobile communities and sustaining participation. This is mainly due to unpredictable and frequent periods of mobility, issues of trust and poor patterns of communication.

Two pieces of research which showed promise were STEP's e-Learning and Traveller Education Scotland (eLates) project (STEP 2011) which aimed at reducing the negative impact of interrupted learning patterns for young Gypsy/Travellers by providing access to online distance learning and teaching; and the e-Learning and Mobilities projects (eLamp) which used laptops and the internet to support learning and communication with schools during periods of travel (Marks, 2006). Although the projects showed some promise, funding challenges meant these initiatives could not be sustained. Now with a wider range of

[1] We use the term mobile family or mobile community as umbrella terms to describe people from various travelling groups that can include Gypsy/Traveller, Roma and Show families.

affordable and high quality digital technology, high device ownership, prevalence of virtual learning environments, and increased and improved networks (free wifi, 3G and 4G connectivity), learning programmes can be designed around the devices children and young people have access to at home.

THE RESEARCH

This exploratory research work gives voice to children and young people who are often not represented by national census or large-scale research, and contributes to knowledge and understanding about the use of technology in mobile communities. The aim of the project was to explore children and young people's practices around new media and digital technology when settled and travelling. This aim was achieved by answering the following research questions:

1. To what extent do children and young people from mobile communities consider digital technology an important part of everyday life?
2. What types of digital technology do the children and young people use and what are typical practices around these?
3. What role does digital technology play in children and young people's learning and education within a mobile context?

STEP met with 19 children and young people (aged 6-16) from mobile communities across Scotland. Researchers used a range of digital and creative methods to prompt dialogue about digital technology. Methods took into consideration the possibility of low literacy, language and preference for oral and visual methods.

THE SAMPLE

The sample was recruited using relationships STEP had built through the Traveller Education Network (TENET) with local schools and Traveller sites in Scotland. These contacts were used to reach groups of children and young people from mobile communities who wished to take part in the study. The final sample consisted of 19 children and young people from mobile communities aged between six and 16 (Figure 1), from two different Travelling groups: Slovakian/Roma and Gypsy/Traveller.

The six children based in Glasgow were from settled Slovakian/Roma families who spoke English as a second language. All children from the Glasgow sample attended primary school, and they and their parents intended to make the transition to the local secondary school. All of these children had either older siblings who were already pupils in the affiliated secondary school, or other siblings in the same primary or nursery schools. The remaining 13 children, based in Edinburgh, Highlands and Ayrshire, were from semi- to highly mobile Gypsy/Traveller families. Six children currently attended primary school, while the remainder had limited experience of primary and secondary schooling and were no longer on school roles.

Participants		Male	Female
Edinburgh (1)	6	3	3
Edinburgh (2)	2	2	0
Glasgow	6	3	3
Highland	3	0	3
South Ayrshire	2	2	0
Total	19*	10	9

Figure 1. Sample breakdown

*****There was a total of 25 participants in the overall study – this included six non-mobile children who participated as 'buddies' for Traveller children in the Edinburgh school-based sample.

THE SETTING

The researchers visited the children and young people in their respective primary schools, community centres or on Traveller sites. Venues were selected through dialogue with participants. In keeping with the methodological approach, it was important that the settings were considered familiar, easily accessible, comfortable and safe by the children and young people. An English as an Additional Language (EAL) teacher and a translator were both

present when working with the Slovakian/Roma participants in Glasgow to support dialogue during creative activities.

The researchers provided art materials and iPads at each setting in order to engage in creative activities with the participants. Some settings had access to computers so young people engaged in creative activities on PCs.

METHODOLOGY

This research adopted a qualitative methodology which draws on the perspective of insiders from the mobile communities. By giving voice to the participants (Lapan et al. 2012), the researcher can be flexible and adapt to participants' specific interests, needs and levels of engagement (Rogers and Evans, 2008). The research design reflected anticipated low written literacy and communication levels and placed emphasis on oral and visual forms of participation and expression.

The approach aimed to encourage meaningful dialogue with the children and young people - viewing them as competent social actors, with unique and valuable knowledge about their social worlds (James and Prout, 1997). The approach contests the view that you can gain accurate knowledge about personal experiences just by asking questions. Based on the assumption that the reflective process cannot be expected to be immediate, the research was participative and creative, enabling participants to take time, and use their hands, bodies and minds to process their thoughts in a range of different ways. Through this embodied experience young people are able to explore ideas as part of an activity that engages them on their own terms. Examples of the types of creative group activities included material and digital self-portraiture based on identities, and creating their own avatars on iPads to explore their virtual personas.

Researchers worked with practitioners and young people to explore and develop a set of questions (Appendix 1), which would prompt the initial discussions.

The research proposal was approved by the University of Edinburgh Ethics Committee and Scottish Government Ethics Committee. The research has been undertaken in accordance with the British Educational Research Association's (BERA) Revised Ethical Guidelines for Educational Research (2004) and the BERA's second revision of the Ethical Guidelines for Educational Research (2011). The participation of children and young people was voluntary and they were aware that they could choose their level of participation in the activities and that they could opt out at any point. Researchers were sensitive to any verbal or behavioural signs of dissent throughout the workshops.

Pseudonyms are used throughout this report.

FINDINGS ON MOBILE CHILDREN AND YOUNG PEOPLE'S USE OF DIGITAL TECHNOLOGY

WHAT IS TECHNOLOGY?

Creative discussions elicited interesting ideas and thoughts about the concept of technology. Most of the groups had a good idea of what technology meant and provided examples of various devices such as mobile phones, laptops and game consoles. The group of younger Travellers from Edinburgh (1) suggested that technology was:

'Shiny, clean stuff'. Edward

'Something that makes machines work'. Jimmy

Some of the older groups provided more concrete examples:

'Something like a phone or a website'. Fran

'It's the internet and 'Smart' stuff'. Ben

'The lights...and stuff that's electric'. Stuart

There were a few instances where children and young people were unsure of how to describe 'technology'. But with further conversations about the types of devices they use, and some examples, the groups were quick to expand on other forms of technology and the types of technology they use at home and in school.

Several young people revealed their love of technology. Describing their everyday practices - technology was central to social lives, and communication and entertainment.

'I looove technology! I would diiiie without it!' Fran

USE OF TECHNOLOGY

During the creative activities, all children and young people used iPads and computers confidently and capably – accessing apps, taking photos and adjusting settings. iPad use prompted further discussion about their use of tablets, smartphones and other technology in different contexts. Children were prompted to think about whether technology helps them, and in what ways.

The use of certain technology, such as phones, taking photos and playing games, was ubiquitous among all groups. Some children and young people used technology for other purposes such as school work (creating presentations on PowerPoint) or social engagement (e.g. Facebook). Aside from a few examples of how children and young people used technology at home and at school, the majority of accounts referred to using technology in the home for two main purposes: social engagement and entertainment.

SOCIAL ENGAGEMENT

The young people from Ayrshire described that they use their phones to communicate with friends and access social networking sites such as Facebook or Oovoo (video chat). Technology helped children and young people from mobile families stay in touch with friends when travelling for long periods of time. Children and young people could socially engage with friends and family, participate in conversations and sharing daily events irrespective of their physical presence during periods of settlement or mobility.

> 'I use Oovoo to talk to my cousins when I'm away or if they're travelling.' Milly

Lucy from the Glasgow group (Slovak/Roma families), described how she uses Facebook to chat with friends. In addition, Facebook and Skype helped maintain relationships with her family in Slovakia – allowing frequent communication and sharing of photos with her grandparents.

ENTERTAINMENT

The children and young people from Edinburgh (1) described using various devices to watch television programmes and cartoons such as Spongebob Squarepants. Many participants described playing games on phones, tablets and game consoles (e.g. Xbox). Many young people also used their mobile phones to take photos of places, things of meaning to them, friends, families and pets. These images were shown to peers and were shared with the researchers to offer an idea of where they lived and the people or pets that were important part of their lives. Other activities using digital technology included watching clips and movies on YouTube, playing Minecraft, MovieStarPlanet, Flappy Birds, army and ghost games, listening to music, and watching movies on phones and tablets.

OWNERSHIP AND ACCESS TO TECHNOLOGY AT HOME

Many of the participants in the Edinburgh (1) sample stated that they had internet access at home, although some shared instances where they were 'cut off' from the internet for a few days thus affecting their use.

The Ayrshire sample described having phones (e.g. iPhone) - although one was broken. They would use various apps and games, which they would change frequently when bored. One girl said she used to have a Blackberry and has a tablet (Huddle) at home, which she uses to access Facebook.

Several of the Edinburgh (1) group stated that they had an iPad or other tablet at home, and that all their parents had phones.

> 'Everyone's got a phone!' Gregory

Other devices listed by participants as being accessible in the home were an Xbox, Wii and PlayStation, tablets, phones, iPods, computers and a laptop (although this child added that the laptop was broken).

A few young people described using iPads, tablets and phones in alternative/mobile locations such as the car or McDonalds. However, their own devices were generally used only in the home/trailer. One girl in the Glasgow sample noted that devices such as phones were not allowed in class, which could dictate when and where children and young people use their mobile devices outside the home.

One participant stated that there were no computers at home to use but his mother did have an iPad which she uses to go onto ebay, Gumtree, or Facebook to buy and sell things. Another participant stated that his dad used a computer for his work but that no-one else used it.

THE ROLE OF TECHNOLOGY IN LEARNING AND SCHOOL

Discussions around the use of technology for learning or in school revealed different attitudes. One participant from the Edinburgh (1) group claimed:

> 'Computers don't help in school'. Kelly

Other participants within this group stated that they do not play any learning games (e.g. apps involving literacy or numeracy) on their iPad. They preferred to play what they described as 'violent games'. When asked whether they would be interested in trying any learning games, the consensus was that they wouldn't because they were too boring.

Despite the Highland group describing limited access to computers at home, the school did provide laptops, which could be used at school, and also taken home when needed to help with homework.

Extending their love of reading, the young people in Ayrshire had used PowerPoint to create a presentation of their book reviews. One of the girls also described using WattPad- a reading and writing app. The app allowed her to download books onto her phone and read them anywhere, and offline.

> 'I love reading! Romance, adventure…like Becca Fitzpatrick….Fallen Angels.' Kim

The most in-depth account of using technology at school was from Lucy in the settled Glasgow sample who described that there are ICT rooms in the school, which she uses a lot.

> 'You can do work on the computers, write, or you can email other schools, emailing other classrooms in Slovakia. Then they email us back. We sometimes send pictures. We find out what they're doing and they see what we're doing- like what Maths we're on.'

Maintaining links with young people in her country of origin was made possible by the school celebrating and valuing other cultures and providing Lucy, and others, with the digital tools to form and sustain relationships.

Although a few Gypsy/Traveller children mentioned using digital technology to stay in touch with friends or cousins, this did not occur in the context of the school. Unlike settled groups, school is not a central day-time location for children and young people's peers and family members on account of unpredictable patterns of mobility and inconsistent school attendance. For this reason, the most effective method of communication is outside school through mobile phones and social media.

CONCLUSIONS

ACCESS AND OWNERSHIP IN THE HOME

Access to digital technology is high among children and young people from mobile families, but not universal. A couple of children reported that there was only one device, such as a laptop or tablet, in the home, and this belonged to a parent. Their accounts suggested that they had no, or limited access to it. Many children stated that they owned or had full access to a games console. All children and young people stated that they had their own phones.

DIGITAL TECHNOLOGY USE IN THE HOME AND IN SCHOOL

This research elucidates how children and young people's digital practices outside school can shape informal and formal learning. Our findings reinforced the idea that a cultural and technological gap exists between young people living and learning with technology, and the existing educational system (Facer, 2011). For example, there were few accounts of using laptops or desktop computers at home for leisure or learning. The most common devices used at home were phones, game consoles and tablets - which were used primarily for entertainment, social networking and communication. Only one child referred to using a mobile device in a mobile context - the remainder only used their devices in the home/trailer.

The use of computers was mainly within school or community centre settings. Phones were not permitted in school, therefore not used in this context. This contrasts greatly to children and young people's interactions with phones outside of school, where all participants reported having a phone, and used them for a broad range of activities such as social networking, communication, entertainment, and photography.

HIERARCHY OF USE

Young people tended to use digital technology for social networking and communicating with family and friends through Skype, email, text and phone calls. The older girls described extensive use of technology for visual life journaling such as taking photos, using photo editing software, and Facebook. These activities took place primarily on their phones - which they also used to watch movies and listen to music.

In contrast, younger children tended to use digital technology for entertainment in the form of video games and playful apps on phones, tablets, and game consoles.

STATEMENT ABOUT EDUCATIONAL USE

This scoping study suggests that children and young people from mobile communities use a range of digital technology. The use of computers was mainly within school or community centre settings - and in these instances, were used effectively for learning. There were few instances where it was used for educational purposes within the home.

The extent to which children and young people have access to tablets, laptops or computers during periods of mobility, as well as the level of support, remains unclear. Despite many stating these devices existed in the home, we cannot assume that they have extended periods of access (e.g. a number of children noted that devices belonged to and were used by parents for work or leisure), quality and unlimited internet access (i.e. during periods of mobility, certain geographical areas have poor 2G and no 3G or 4G), nor can it be assumed that these devices will have standard software that may be necessary for homework (e.g. Adobe, Microsoft Word, Apple Pages, Powerpoint). For this reason, using or relying on technology to complete schoolwork may be challenging.

Findings suggest that there is the potential for mobile communities to use digital technology to support learning both when settled and during periods of travel. All participants had access to at least a smartphone, and at most, laptops, tablets, and game consoles, which can

all be used to support learning and development. All participants exhibited basic knowledge and skills around digital technology.

Based on our preliminary findings, the most significant educational potential for boys from mobile communities lies in the combination of gaming applications and informal learning opportunities. Game-based learning can support learning and literacy in many ways. For example, oral language and discussion generated by game-play is a vital foundation for literacy development, and group discussion and interaction supports social development (Gee, 2012). Its multimodal form means that children must develop new literacy practices where they interpret sound, image, and written text, to make sense and problem solve (Sandford and Williamson, 2005). Games are effective learning environments primarily because they are interest-driven - so learners are engaged, focused and motivated (Perrotta et al. 2013). Successful game-based learning in practice is evidenced by case studies such as 'Using Minecraft to teach math' (Pike and Stuppy, 2015) and after-school e-games leagues initiatives (Sandford and Williamson, 2005).

In contrast, the most significant educational potential for girls from mobile communities lies within their engagement in social media. Transferable skills such as online video and text-based communication, image creation and sharing, peer support, and collaboration can be effectively integrated into a range of different learning activities and in formal educational settings.

RECOMMENDATIONS

In light of the evidence for high device ownership among mobile families, our research suggests that there is great potential for these devices to be integrated into technology-mediated learning opportunities across informal and formal learning contexts. Key recommendations for this to be successful include:

INCREASING BREADTH AND DEPTH OF USE

The research suggests that, for many, digital technology is used for the purposes of social media, entertainment and passive content consumption. Families could be better informed and supported in the most effective ways of using the internet and devices for education and learning.

Children and young people need to understand how to use technology as a tool for creative, productive and life-long learning. By improving the breadth and depth of technology use in mobile families - learning can be supported in engaging ways.

IDENTIFY DIGITAL LITERACY LEVELS

Researchers, schools and practitioners need to identify students' digital literacy levels. 'Natives', whether referring to common rhetoric of 'digital natives' or traditional 'pen-and-ink literacies, will vary greatly in their access (to devices - or books), mastership (the layman, the author, the poet), and interest. For example, Gee (2012) suggests that the same groups of people within the population who receive and have access to the highest levels of traditional literacy (i.e. high SES) are the same groups who experience and have high digital literacy. It is therefore necessary to consider a more nuanced digital practice across childhoods - where some have strong aptitudes for a range of digital technologies and media, while others may have a poor grasp, and that specific socio-demographic factors will shape the type of digital skills individuals possess, which in turn, shape forms of engagement with the internet (Helsper and Eynon 2013). It is therefore important to identify children and young people from mobile families' digital literacy levels in order to support further literacy development for successful learning with digital technology. Children and young people should have the

opportunity to build on digital skills, become critical users, understand the ethical issues of online content, and find their voice through digital technology in meaningful and creative ways.

IMPLICATIONS FOR SCHOOL STAFF ENGAGING FAMILIES

- Raise awareness among families of positive learning opportunities offered by digital technology.
- Recognise and harness the move from desktop computers to mobile devices (tablets, smartphones) in family digital practice. Suggest how classroom learning can be extended to the home using devices familiar to individual families.
- Parents also have a responsibility to educate themselves on the opportunities offered by digital technology as a tool to support the pursuit of knowledge, learning, and positive economic outcomes. Parents should seek advice about ways to use technology to support informal learning outside school and while travelling.

IMPLICATIONS FOR SCHOOL STAFF OWN DEVELOPMENT /PEDAGOGY

- Consider prior knowledge and abilities in using digital technology. A teacher's existing digital practices and attitudes towards technology can shape classroom practice and learning. Draw on existing skills to support mobile children and young people learning in creative and engaging ways.
- Identify professional development needs with regard to digital technology and its application in the classroom. Research suggests that nearly half of teachers rarely use technology in their classrooms (Gurney-Read, 2015) – for many, due to a lack of training. Consequently, programmes that successfully integrate digital technologies into formal educational settings ensure teacher training prior to implementation (O'Malley et al. 2013). Teachers' digital skills may affect confidence in the classroom and ability to provide pupils with technical support. Seek professional development opportunities to build confidence and breadth of abilities when using digital technology as pedagogical tool.
- Use existing devices in mobile family lives into effective classroom practice.

- Develop knowledge and strategies to support mobile children and young people through appropriate apps.
- Extend classroom learning to mobile device platforms to maintain continuity through informal learning in the home.

IMPLICATIONS FOR SCHOOLS AND POLICY-MAKERS

- Initiatives should focus beyond access to the internet and digital devices, and encourage and support digital literacy across the curriculum. The Organisation for Economic Cooperation and Development (OECD 2015) showed that more digital devices in schools did not necessarily lead to better performance, so recommends that better implementation of technology in the classroom is the key to effective learning through digital technology.
- Schools should empower children and young people from mobile communities to harness the opportunities offered by the digital technologies to which they have access.
- Allow familiar devices to be used in classrooms. Implement strategies to prompt and support teachers with effective integration of digital technology into classroom learning.
- Teachers should receive ongoing technical and pedagogical support to sustain positive and effective use of digital technology in the classroom. This also extends beyond the classroom. Teachers may need additional support when working with highly mobile families where learning and technology integration must adapt to transient lifestyles or low literacy levels.
- Teachers should be given opportunities to train on and understand the platforms they will be using, and how to use these in the most effective ways within their subject/curriculum area.
- Encourage and support content creation. To provide opportunities and initiatives where mobile children and young people can create digital content which is relevant to their culture and represents their lived experiences.

- Provide high-quality digital learning resources to eliminate the time-consuming task of identifying appropriate and effective apps and software to support learning.

FINAL THOUGHTS

These findings reinforce the need for a shared vision for how digital technology can be used to improve outcomes for young mobile learners. Digital technology provides great promise for both learning and teaching.

Further research is required into how digital technology can be used as a sustainable tool for supporting learning in mobile cultures.

Harnessing the power of digital technology, and supporting families in doing this, is a positive step toward closing the attainment gap for mobile families.

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APPENDIX 1

Questions discussed through range of creative arts and iPads activities

ATTITUDES TOWARD NEW MEDIA AND DIGITAL TECHNOLOGY

1. What is technology?
2. Does technology help you? In what ways? (e.g. at home, with family, reading, school work, maths, language, travel, socialising)
3. Is technology an important part of learning?
4. Is technology an important part of School?
5. Is there any technology that you think would help you but do not have? Have not tried?
6. Do you think the Internet is useful? In what ways?
7. What does your phone/laptop/tablet mean to you? How would you feel if you didn't have them?

PRACTICES AROUND MEDIA AND DIGITAL TECHNOLOGY

1. What types of technology do you use? (e.g. the internet, websites, TV, DVDs, mobile devices)
2. What devices are in your home? (e.g. desktop, TV, Smartphone, game consoles, Nintendo, iPad)
3. Which devices do you own? [Who do the other devices belong to? Parent, sibling?)
4. What do you do on these devices? (e.g. games, social media, homework, research, reading, music)
5. What websites have you visited today/this week? Why useful/ good?
6. What types of information do you look for online?
7. Do you have the internet at home?
8. Where do you use technology? (e.g. School, Home, library, friend's home, Coffee shops, car, train)

APPENDIX 2

AFFORDANCES OF DIGITAL TECHNOLOGY IN EDUCATION	SUPPORTING MOBILE CULTURES' LEARNING
1. Multimodal affordances	Resonates with mobile cultures' forms of learning, communication and expression
2. Storage and research	Addresses issues of space and storage within trailer
3. Conceptual development of subject matter	Supports active learning and consolidation of new knowledge and understanding
4. Communication, sharing, collaboration	Supporting continuity in education and learning support networks during periods of travel
5. Content creation and interest-driven learning	Empowering young people, ensuring content relevance, engagement for learning
6. Interactive, immersive, and creative	Inspiring and motivating potentially disengaged learners, with low literacy, and gaps in education

Table 1: Affordances of digital technology: supporting learning in mobile cultures

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