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Educational Technology Goes Mobile:
Why? A Case Study of Finland

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ABSTRACT

Recent decades have revealed that the digital educational technology that is expected to revolutionise schooling for generations to come, is fraught with challenges. One major challenge is that educational systems vastly vary between cultures and countries. The differences start from the conceptualisation of education and school. It is, therefore, quite inaccurate to handle education as a universal concept. In this article the authors evade generalisation by discussing the use of mobile technology in the schools of one single, relatively homogenous nation: Finland. The backbone of their analysis is the core national curriculum of basic education. The appropriateness of mobile technology in the school context is reflected upon through the objectives and ethos of basic education. The conclusions are discussed in terms of their contribution to the understanding of the use culture of mobile technology.

KEYWORDS

Basic Education, Educational Technology, Mobile Computing, Mobile Technology

INTRODUCTION

Using technology in education to enhance learning is an ancient idea. Every school is made up of a myriad of technological constructions, many of which may be classified as educational technology. Recently, however, there has been an exceptional amount of publicity and research activity around educational technology, as characterised by information technology (IT) – that is, artefacts and systems substantiated by IT and designed with the intention of being utilised in the context of learning. In this article we analyse the relationship between school and technology, focusing on the latest phenomena in the domain, and try to understand why there is so much talk about this topic right now. What is intended to be emphasised in this article, is that most technologies, even educational technologies, are not necessarily digital or information technology by nature. Rather, language, writing and print technologies, electricity and even the architecture of schools are technologies. Moreover, schools can be interpreted as institutions for conveying these conventions, and indeed are in their own right technological constructions - so, then, why now the emphasis on educational technology?

Before going deeper into educational technology, we need to clarify the concept of educational technology. At first sight, defining educational technology appears a trivial task but both education and technology as concepts can, in fact, be non-trivial.

To build on what was previously described, let us start with technology. Technology is not simply a means of aiding computational processes, but has always been a central phenomenon in human life. This brings to light the importance of the term ‘technology’ as referring to anything that has been

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devised by human beings, through their intellect and intention, in order to solve problems and improve circumstances (Buchanan, 2017), in other words, technologies are tools. Language is technology (Mufwene, 2013), as are cave paintings and sticks that are deliberately selected to draw markings in the earth through which to communicate stories (d'Errico et al., 2016). This view of technology can be likened to that of observing technology as the design of symbolically-mediated behaviour – the basic premise of information technology. Furthermore, when defining what technology is, we may refer to MacKenzie and Wajcman (1985) who state that technology is characterised by three distinct composites: 1) it comprises artefacts and technical systems; 2) the knowledge of these (i.e., recognising and understanding the tools and systems); and 3) behaviour that occurs in conjunction with the technology – usage, culture, economics, politics etc. (Bijker, 2010).

From a social constructionist perspective, we may observe that technology is not only represented by and within social discourse, but also is constituted through it (Bijker, 2010). That is, via following MacKenzie and Wajcman's (1985) dimensions of knowledge and behaviour within the constituency of technology, it may be observed that social discourse as knowledge, its representation and the behaviour associated with this, are what make technology, technology.

It appears that in colloquial language, often 'technology' is thought of or referred to as digital (information) technology. Thus, digital technology can be considered the dominant technological discourse in the post-industrial (and arguably industrial) international economy. The automatic default to IT in speech and meaning can be viewed as a result of both political and commercial aggression (Kapitzke, 2000). More precisely, the referent is not digital technology per se, but most often a consumer product which contains digital technology in one form or another. For some reason, it is digital technology that seems to have mystical value over all other kinds of technology. The digital halo seems to penetrate to educational discourse with force. In other contexts, educationalists have a high profile in maintaining the academic ideals, like accuracy in the definition of concepts. Whenever digital technology is touched upon, however, the vocabulary is a mishmash of marketing language and educational jargon. For instance, the widely spread concept of "digital learning" is hard to justify. There are at least three possible interpretations of this concept:

1. **Literal Interpretation:** Literally taken, there should be some special kind of learning which is digital by nature. Digital, in turn, means the presentation of data in exact numbers – usually in binary format, in zeros and ones; yes or no. So digital learning would imply – what? That learning either takes place or not?
2. **Metaphor:** As can be seen above, it is hardly appropriate to interpret digital learning literally. Could digital learning be a metaphorical expression then? To give an answer, we will need to consider what it means to be metaphorical. As we previously argued (Pirhonen, 2005), the purpose of a metaphor is to support the conceptualisation process with the help of existing concepts. To be appropriate, a metaphor has to direct attention to essential properties of the new concept. So what is that essential property of learning which would justify calling it digital? Learning is learning, whether the applied educational technology utilises digital or any other form of technology.
3. **"Everybody Knows Anyway What We Are Talking About":** Could digital learning be understood as just another label for the application of modern ICT in educational contexts? In the learning context, when digital technology is applied, the digital nature of the applied technology is often not observable. Actually, the quality of the user-interface of a digital application is largely assessed on the basis of how well the digitality is hidden and how strong the illusion is of analogue-ness. A typical example is a digital photo – it imitates a real scene, but in fact it is only a huge matrix of pixels. If we zoom the picture too close, the illusion disappears and the pixels are revealed. Likewise, in digital video images, the only case in which we realise that it is a question of digital technology is when there is some technical failure and the picture is pixelized. In other words, in the learning context only the processor level of basic technology is digital, but the applications are supposed to work just as their real-world referents.

In brief, the abundant use of the word 'digital' in the educational context lacks substance-derived justification. From the perspective of learning, it would be wiser to talk about phenomena with their real names rather than striving to hide the reality behind euphemisms, clumsy metaphors and marketing jargon. Especially in the use of mobile devices in education, it would be beneficial to describe human behaviour in a realistic manner, and to adopt an approach such as a social constructionist approach to technology, to characterise the nature of mobile IT in the context of education. From a linguistic and metaphorical perspective, for example, if the user of a mobile device is about to sign into Facebook, rather than reporting that he/she is "going into" Facebook, we should be interested in knowing where he/she is really going, and what else is happening within his/her (physical and embodied) surroundings. A related issue is that the only device-dependent physical activity is the use of one or two fingers, whereas all bodily activity – or lack thereof – would deserve our attention as designers; the whole, embodied human being is there, interacting with the environment in numerous ways. Thus, the user, standing in the middle of the school yard, oblivious to the break time noise around him/her, uses his/her pointer finger to swipe the touchscreen. His/her eyes, constantly scanning the contents and forms presented on the screen, arrive upon the Facebook icon that he/she recognises and remembers from previous usage. His/her attention remains on the icon as his/her pointer finger presses firmly on its place. The screen view changes several times before the desired page view appears in sight. The user's attention remains on the contents of the pages, continually processing the information of his/her friends' updates. His/her mind is overwhelmed and racing at 150 words and pictures per minute, yet his/her body remains stagnant in the middle of the school yard.

Above we discussed the concept of technology, without a clear conclusion or definition. Rather, there is the acknowledgement that technology itself is a social discursive construction, through which its reality and materiality are realised. IT by nature focuses on information; information is amass with pluralistic interpretations both linguistic and behavioural which, from this perspective, endows IT with technological superiority, in that no one ever has a concise understanding of what it is, and more importantly, what it can do. The point is, however, that technology in the educational context cannot be valued on the basis of the type of technology it is, but rather, its contribution to the educational objectives. We now therefore turn the focus on the other problematic concept: education.

Philosopher John Dewey (1944) described education as a process in which learning is facilitated, and within this process, skills, knowledge, beliefs, values and even habits are acquired. Education is not bound to institution or context yet is often, through societal discourse, connected to schools and other official organisations through which learning systems are implemented and mediated. Educational systems, cultures and practices vary across cultures. Common to them is that they have a political dimension. They are always created and fostered within the context of a political system and its associated political ideologies (Bijker, 2010; Dewey, 1944; Kapitzke, 2000). Educational systems are intended to instill these political ideologies throughout the framework of the society. For instance, when observing the Nordic welfare model, education can be seen as the key operant involved in not only increasing literacy throughout the Nordic countries but, in doing so, also increasing living and cultural standards by enabling citizens to both engage in higher skilled professions and modes of higher culture (Esping-Andersen, 2005). Subsequently, the next generation is supposed to be educated by the current adults, in order to assure the continuance of the culture. As a logical consequence it can be argued that education is – by definition – a culture-dependent and instilling phenomenon. Yet, ironically as such, inevitably there are cultural changes from one generation to the next that are contingent upon political, technological and economic developments and substructures (Gans, 2012). We do not, therefore, try to abstract education to a universal level, but simply choose a sample nation in our analysis. For us, the natural choice is Finland, not least because of its positive and widely spread reputation in education.

SOME PECULIARITIES OF EDUCATION IN FINLAND

When discussing education in an international context, Finns have a peculiar problem which is seldom spoken about. In Finnish language, there are two words which are used as a translation of the English word 'education.' Firstly, there is a formal word which can be translated into English with a similar connotation to schooling. In the research context, however, for instance in educational science, the literal translation would be something like "the science of upbringing" (*kasvatustiede*). Words are often seen to be fundamentally metaphorical by nature, so it is worthwhile contemplating the difference between the English word and its Finnish equivalent – or to question that equivalence. In other words, the Finnish translation of education has very different connotations to the word 'education' utilised in the English-speaking world.

As the Finnish equivalent of the term education reflects, education has traditionally played a pivotal role in society. This relates to the Nordic welfare model, and how schools and schooling were instrumentally developed to increase not simply the quality of life in Nordic countries, but the quality, or class, of citizens (Antikainen, 2006; Bourdieu & Passeron, 1990; Esping-Andersen, 2005). The central role of school in the life of young people in Finland may be both a strength and challenge. Its strength rests in the sense that the objectives of school education are extremely ambitious and all-embracing. It embraces the learner as a holistic being and in doing so incorporates matters of outer-school life, lifestyle, nutrition (state provided school meals) and fitness (health) within its national curriculum (Finnish National Board of Education, 2016). It creates a challenge, though, in that there are cases where parents evade their fundamental responsibility of upbringing, and instead, hand this responsibility entirely over to the school.

The ambitious objectives, principles, contents and other constituents of school education can be found in a document called the Core Curriculum of Basic Education (Finnish National Board of Education, 2014), which is more than 500 pages in length. The core curriculum is the framework within which municipal curricula are developed. In the Finnish system, individual teachers have considerable leeway to use their expertise in the implementation of school life. This freedom is supported by the high level and quality of teacher education. Teacher qualifications in basic education have entailed a master's degree (MA) since 1979. For a primary school teacher, for instance, this implies an MA in Educational Science. The profession is highly valued. A teacher's career is among the highest publicly ranked careers. Among secondary school graduates, the departments of teacher education in the Finnish universities have the privilege of creaming off the highest high school achievers from the applicants – the entrance percentage being typically nearer to 5% than 10%.

After this condensed introduction to the world of Finnish education, we now will take a look at the content of the Core Curriculum from the point-of-view of mobile technology.

As an integral part of society, the educational system has to integrate into other societal structures. In addition to being a technological discourse in and of itself, it also needs to support the individual's learning of competences in relation to other technological societal spheres, both in life (e.g., healthcare and commerce structures) as well as professional spheres (professional pathways represented by prevalent industries of the times). It is, therefore, interesting and important to analyse the relationship between school life and society since society does not merely just frame schools and their associated technologies through discourse, but also validates their function and operations.

The Core Curriculum of Basic Education contains many references to the world outside the school. Obviously, even the pure existence of formal education can only be justified by its role in the national and international society. Without going any deeper into the socialization-related objectives stated in the Core Curriculum, we concentrate on expressions which are directly related to the stance chosen for examining the changing world around us. This is because our intention in this article is to discuss the role of mobile technology in the school context.

A very common claim is that the objective of school education is to provide students with skills and knowledge that are necessary for living in the future world. There appears to be considerable

consensus regarding this quality and, what is more, this very characteristic is what substantiates school education as being critical for the upbringing of an individual in any society. If we have a closer look at the Core Curriculum, however, the setting is inverted. In Chapter 3.1, towards the beginning of the document, where the general level objectives are described, it is stated:

Changes in the world outside the school unavoidably affect the pupils' development and well-being as well as the operation of the school. In basic education, the pupils learn to encounter pressures for change openly, to assess them critically and to assume responsibility for making choices that build our future. (Finnish National Board of Education, 2016, p. 18)

That is just another statement repeated in one form or another elsewhere in the text – which reflects the idea that the objective of basic education is to educate creative, knowledgeable, value conscious, healthy and active constructors of the future. The objective is thus not to prepare the pupils to survive or cope in the world that has been constructed by someone else out there, but to contemplate what is right and what is wrong and boldly meet the challenge of making the world a better place.

These idealistic objectives do not have much to do with the current reality among Finnish school children. Especially among commercial media, the ethos of the Core Curriculum has been ignored. The Core Curriculum has been in the headlines many times, but the actual content has been quoted very selectively. Concerning information and communication technology (ICT), the media has repeatedly reminded its public that according to the new curriculum, computer programming is being taught from the first grade onwards. This is probably seen as great news: finally schools are joining the information society. In fact, programming is mentioned in the 508-page long document 14 times altogether. In contrast, for instance *sustainability* has been mentioned 187 times, without any reaction on behalf of the media.

The references to ICT in the Core Curriculum are many but, as we have previously analysed (Pirhonen, 2016), the way in which ICT is embedded in the text is peculiar. The text of the Core Curriculum mostly reflects ambition and expertise of school education, whereas the references to ICT stand out of the otherwise coherent text. For instance, concerning the teaching and learning of languages, it is stated that, "ICT provides a natural opportunity for implementing language instruction based on authentic situations and the pupils' communication needs." This sounds sensible at first sight but the same phrase has been – apparently – copied and pasted into six different chapters word-by-word. The same phenomenon can be seen in for example music education: "Opportunities for using information and communication technology in music making are created in teaching and learning." This phrase has been copy-pasted three times to objectives concerning grades 1-2, 3-6 and 7-9. Common to these kinds of phrases is that there are no reasons or justifications given for these decisions, neither details. The reader of the document may interpret that these unconnected statements stem from political ambitions rather than pedagogical expertise; they appear compulsory statements which have been added to the text to please the politicians who consider the school system to be one instrument to promote the digitalization of the country.

If we take technology as it is commonly defined, as a tool to enable the performance of a task (MacKenzie & Wajcman, 1985), we can analyse what would be the contribution of mobile technology to reach the ambitious objectives of Core Curriculum. In fact, there is only one exact reference to mobile technology in the document: "The pupils utilise mobile devices in crafts and practise creating three-dimensional illustrations and models."

This once more is an interesting statement. Why does it need to be a mobile device? For what exactly are mobile devices supposed to be used? Do we have to list all potential technical constructions in the school environment in the curriculum and state that they are used? Providing a list of preferred technologies is in clear conflict with the autonomy of a Finnish teacher. Also, these kinds of banal statements actually rot the status of the Core Curriculum, and the reputation of the Finnish school system in the worst case.

If the authors of the Core Curriculum have been unable to justify the abundant repetition of ICT in the document, perhaps the highly educated and creative teachers are. Unfortunately, there is no convincing indication of that. There is a controversial ongoing debate about the role of, in particular, so-called smart phones in schools. Usually, it is a question of the pupils' own devices. Some teachers argue that they interfere with school life and therefore actions should be taken to restrict the appearance of those devices at school. On the other hand, some teachers say that rather than ban the devices, they should be effectively utilised in teaching and learning (the so-called bring your own device approach). Both sides have convincing as well as not so convincing arguments. In the ban-camp, there are many who represent a general resistance to change, which is not an ideal basis for the development of pedagogy. Then, from the more enthusiastic side, the cliché that "the world is changing" is constantly chimed, and as a consequence, the school system has to change as well. In other words, as discussed above, in this view the school system should adapt to the world built by someone else, rather than being an active contributor to shaping the world itself.

The latter view indicates ultimate pessimism. "The world is changing" would be, in the spirit of the Core Curriculum, "the world is being changed". The world does not change by itself; someone makes decisions and takes actions. If one is not contributing to enabling change, someone else is.

In the history of the Finnish comprehensive school, there are encouraging examples of the strong influence of wise decisions in basic education. A prime example is that of school meals, which are dealt with even in the Core Curriculum. In the early days of the Finnish comprehensive education system in the 1970s, the health authorities were very concerned about the high rate of cardiovascular disease, especially in Eastern Finland. There was a famous effort called the North Carelia Project, in which the whole nation was taught to change their diet, especially reducing salt and hard fats. At the core of its implementation was the then newly developed comprehensive school, in which lunches were, and still are, an important part of the school day. In this way, the whole generation adopted a healthier life-style. In the context of mobile applications at school, it might be worthwhile remembering the encouraging experiences of the North Carelia project. If back then the system would have followed in school meals a similar kind of policy that is currently prevalent to mobile technology in schools today, it would have been stated that fatty and salty food is what is common in all society, and that schools need to adapt to it. Pupils like salty fatty food but, contrary to what children, youth and moreover business liked, the decisions made back in the 1970s were based on the view of nutrition scientists. Since the project concerned the whole nation, gradually pupils and their families learned to like the taste of healthier food.

What would be a North Carelia project of ICT consumption? Just like in the nutrition program, the starting point should be credible research. Rather than repeating clichés about the role of school to follow societal trends, the educationalists should be brave enough to articulate the findings and conclusions: What is the real value of ICT in the light of curricula? And, even more, what is the impact of ICT use on children and young people's learning and well-being?

The prevailing zeitgeist does not favour normative statements – we rather hide behind relativism and pluralism. If we dare to weed out practices which appear to lean towards the wrong direction, however, we do a favour to the distribution of good quality schooling. That, in turn, may well include the application of mobile technology, whenever that reveals to be appropriate. There exists convincing evidence from research spanning back to the 1970s about the harm that can follow when children interact heavily with screen-based devices and do not interact enough with the world around them. Not only is their ability for spatial-temporal judgment, and overall motor-sensory abilities impaired, but their ability to meet challenges when being presented with them is also damaged (Fuchs, 2017). This psycho-physiological harm caused by a zeitgeist of technology (food in the 1970s and information technology in the 21st century) needs to be carefully considered, researched and addressed, in order to maximise the potential for learning from the 21st Century onwards.

SOME CONCLUSIONS

In this article we have dealt with the relationship between mobile technology and education and, more precisely, between mobile applications and the Core Curriculum of Finnish Basic Education. The market-driven world of mobile technology is a very different one to the highly idealistic, optimistic ethos of the reputable Finnish school system. If these are two incommensurable worlds, why did we choose the topic for this opinion piece? That is a good question indeed. The objective of school education is to bring up highly civilised, knowledgeable, value conscious, persistent and healthy citizens; in other words, schools should provide the constituents of a good life. In practice, this implies hard work, joy and sorrow. The marketing of consumer electronics only promises joy and happiness in response to ever decreasing effort. In HCI rhetoric, it is easy to interpret ease-of-use and similar kinds of qualities as the guiding principles of digital technology. Because of this contradiction, the application of mobile devices which have primarily been designed to sell, not educate, has to be considered with care.

What does this all have to do with mobile HCI? Mobile HCI, if anything, is a future-oriented area of research. As we have previously argued (Pirhonen, Maksimainen & Sillence, 2012), design of technology should be seen as design of the future world. The school as an institution also has a strong orientation to the future. As such, we conclude that, in the school context, it is highly relevant to consider design concepts in terms of the long term.

In HCI studies, it is widely accepted that, for instance, when designing with older adults in mind, all users benefit from the outcome. It has been found that typically the guidelines for designing for older adults just make good general HCI practices concrete (see e.g., Zajicek, 2004). This phenomenon is related to the persona approach (Cooper, 2004): satisfying the needs of given, real users, typically benefits all users. On the other hand, when generalizing the objectives of design, trying to please everyone, it may happen that the result does not work with anybody (Eccher, Hunley, & Simmons, 2005). We thus challenge mobile HCI researchers to consider children in the school context when introducing new technology. The proposed approach would force us to consider the long-term consequences of given mobile applications and the related use cultures – for all of us.

REFERENCES

Antikainen, A. (2006). In search of the Nordic model in education. *Scandinavian Journal of Educational Research*, *50*(3), 229–243. doi:10.1080/00313830600743258

Bijker, W. E. (2010). How is technology made?—That is the question! *Cambridge Journal of Economics*, *34*(1), 63–76. doi:10.1093/cje/bep068

Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society and culture* (Vol. 4). London, UK: Sage.

Buchanan, R. (2017). History of Technology. *Encyclopaedia Britannica*. Retrieved from https://www.britannica.com/technology/history-of-technology

Cooper, A. (2004). *The inmates are running the asylum: Why high-tech products drive us crazy and how to restore the sanity*. Indianapolis, IN: Sams.

d'Errico, F., Bouillot, L. D., García-Diez, M., Martí, A. P., Pimentel, D. G., & Zilhao, J. (2016). The technology of the earliest European cave paintings: El Castillo Cave, Spain. *Journal of Archaeological Science*, *70*(June), 48–65. doi:10.1016/j.jas.2016.03.007

Dewey, J. (1944). *Democracy and Education*. New York, NY: The Free Press. (Original work published 1916)

Eccher, C., Hunley, E., & Simmons, E. D. (2005). *Professional web design: techniques and templates* (2nd ed.). Hingham, MA: Charles River Media.

Esping-Andersen, G. (2005). Education and equal life chances: Investing in children. In O. Kangas, & J. Palme (Eds.), Social policy and economic development in the Nordic countries (pp. 147-163). Houndmills, UK: Palgrave Macmillan.

Finnish National Board of Education. (2016). National Core Curriculum for Basic Education 2014. Helsinki (FI): Finnish National Board of Education.

Fuchs, T. (2017). Keynote. Towards a healthy digital ecosystem: values, competences & responsibilities. Alliance ELIANT. Royal Library of Belgium, Brussels, Belgium (November 28th, 2017).

Gans, H. J. (2012). Against culture versus structure. *Identities (Yverdon)*, *19*(2), 125–134. doi:10.1080/1070289X.2012.672850

Kapitzke, C. (2000). Information technology as cultural capital: Shifting the boundaries of power. *Education and Information Technologies*, *5*(1), 49–62. doi:10.1023/A:1009640518635

MacKenzie, D., & Wajcman, J. (Eds.). (1985). *The Social Shaping of Technology. How the Refrigerator Got its Hum*. Milton Keynes, UK: Open University Press.

Mufwene, S. S. (2013). Language as technology: Some questions that evolutionary linguists should address. In T. Lohndahl (Ed.), *In Search of Universal Grammar: From Old Norse to Zoque* (pp. 327–358). Amsterdam, NL: John Benjamins. doi:10.1075/la.202.22muf

Pirhonen, A. (2005). To simulate or to stimulate? In search of the power of metaphor in design. In A. Pirhonen, H. Isomäki, C. Roast, & P. Saariluoma (Eds.), *Future interaction design* (pp. 105–123). London, UK: Springer Verlag. doi:10.1007/1-84628-089-3_7

Pirhonen, A. (2016). The ethos of the discourse concerning the future and technology. In *Proceedings of PATT2016 - Technology Education for 21st Century skills*, August 23-26 (pp. 386-390). Utrecht, the Netherlands.

Pirhonen, A., Maksimainen, J., & Sillence, E. (2012). The design of information technology as design of the information society. In H. Li (Ed.), *Studies on inequalities in information society. Proceedings of the fourth international conference on Well-Being in the Information Society* (WIS 2012), University of Turku (pp.125-132).

Zajicek, M. (2004). Successful and available: Interface design exemplars for older users. *Interacting with Computers*, *16*(3), 411–430. doi:10.1016/j.intcom.2004.04.003

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Rebekah Rousi is an Australian born artist and adult educator, who has been researching human-technology interaction since 2009. She has been involved in a number of projects focusing on usability and user experience in diverse contexts, including major educational technology projects such as Systemic Learning Solutions (Systech - funded by the Finnish Funding Agency for Innovation, Tekes) and currently Awareness, Prevention and Early Intervention (APEX – an Academy of Finland funded Strategic Consortium), dealing with digital mental health literacy in Finnish schools. Rousi's main research focus is on human experience in diverse human-technology contexts from human-robotic interaction, to virtual and augmented reality, art and architecture. Rousi defended her PhD in Cognitive Science, in 2013, at the University of Jyväskylä, Finland.