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16. ICTS IN A SCHOOL'S EVERYDAY LIFE – DEVELOPING THE EDUCATIONAL USE OF ICTS IN FINNISH SCHOOLS OF THE FUTURE

ABSTRACT

The ICTs in School's Everyday Life Project is a national project carried out by the Finnish Ministry of Transport and Communications, the Ministry of Education and the Finnish Board of Education in co-operation with industry and commerce. The project was included in the Finnish government programme and National Information Society Policy of Finland. The aim of the project was to create a national educational technology plan and the vision was that Finnish schools would have practical models and innovative teaching practices for using ICT in all Finnish schools. The project aimed to produce new knowledge and know-how for schools and educational administrators about the latest developments in ICTs, but more importantly to develop the educational use of ICT in multi-dimensional ways. A new Finnish core curriculum reform process for basic education started in 2012 and the final documents were published at the end of 2014. The new curriculum emphasizes 21st century skills, like critical and creative thinking skills and collaborative modes of studying. ICT is seen having an important role in supporting and developing these skills. It is useful tool, which also can expand learning environments and diversify methods of working.

This chapter presents some of the background knowledge and strategic guidelines contained in the National Educational Technology Plan and Finnish National Core Curriculum and discusses their implications in schools' everyday lives.

Keywords: educational use of ICTs, media culture, media education, strategic planning

MEDIA CULTURE IS PART OF CHILDREN'S EVERYDAY LIFE IN FINLAND

Communication technologies and the world of media are ubiquitous in Finnish society today, permeating working life, services, leisure pursuits and societal structures. The development of information and communication technologies (ICTs) and different media figures prominently in many ways in our everyday lives, where

new forms and social uses of media emerge constantly. In a reflection of this trend, Finnish educators and decision makers have seen opportunities for using ICT in teaching and learning increase dramatically in the last decade.

Media culture, the different ways in which media are used and the tools for using them become an established part of children's lives in Finland when they are as young as seven or eight years old. Children and adolescents use the Internet, a range of social networking services and cell phones; they use their phones to take pictures and listen to music, watch television and play numerous games. ICT and media play a significant role in developing the competences and skills of children and adolescents, moulding their view of their world in the process (Kangas, Sintonen, & Lundvall, 2008; Kotilainen, 2011, 68–70).

In the course of the past decade, social media and advances in mobile tools have revolutionized the use of ICT on the ground. Today, every school and municipality can tap into the working methods based on collaboration and intense personal experience that the literature of the field has been talking about for the last ten years.

The services offered by social media claim large numbers of users and the applications in this area are used for many purposes. For example, Facebook reported that it has broken the 1.5 billion-user mark. The number of monthly active WhatsApp users, a crossplatform mobile messaging application, in September 2015 was 900 million worldwide. Approximately 52% of 12 to 65 year-old Finnish citizens use the service. This means a total of 2 million Finnish users. It has also been estimated that approximately 89% of the youth aged 12 to 17 are active users. The photo-sharing app Instagram had over 400 million monthly active accounts.

One of the most popular social media services among children and adolescents is YouTube, used for sharing video clips. In the autumn of 2015, there were an utterly astounding four billion video clips viewed daily. And the phenomenon does not seem to be a passing fad—quite the contrary. New applications, services and ways of using media emerge constantly, as old ones fall out of use.

Why is it that the use of social media services and network communities are so popular among children and adolescents? The first explanation often put forward is that the technology is easy to use. Little or no technical know-how is needed. Users also value the opportunities to exercise creativity and self-expression and to be part of something. If she or he wants to, anyone can be an active agent or player on the net, not merely a consumer or user of material produced by others. One hears the word “produsage”, meaning that the users themselves, or in collaboration with their friends, can produce and create content that reflects their interests. Every user has the chance to be an active communicator, sending information in addition to receiving it. With a single click, one can easily produce content to be explored and admired—by both a global audience and one's best friends. Many net phenomena also function as important topics of conversation and sources of humour and entertainment in young people's media culture (see Kynäslähti et al., 2007; Kalliala & Toikkanen, 2009).

THE RATIONALE FOR ICT: 21ST CENTURY SKILLS

Discussions of the reform and development of the schools and teaching in Finland focus on the skills needed in the twenty-first century or the skills citizens will need in the near future. The proposal put forward by the Finnish Ministry of Education and Culture regarding the general national objectives and the distribution of lesson hours for basic education (2010, 14) summarized the skill set of the citizen of the future as follows: (1) thinking skills, (2) ways of working and interaction, (3) crafts and expressive skills, (4) participation and initiative, and (5) self-awareness and personal responsibility.

The definitions used in the International Assessment and Teaching of 21st Century Skills (ATC21S), a project conducted at the University of Melbourne, are based on extensive international collaborative research. ATC21S divided skills into four categories: (1) ways of thinking, (e.g. critical thinking, creativity, problem solving); (2) ways of working, (e.g. communication and collaboration); (3) tools for working (e.g. information and communications technology (ICT) and information literacy); and (4) skills for living in the world (e.g. global agency, social responsibility) (National Educational Technology Plan, 2010; Basic Education in Finland, 2020; Salo, Kankaanranta, Vähähyppä, & Viik-Kajander, 2011; Kankaanranta & Vahtivuori-Hänninen, 2011; Finnish National Board of Education, 2014). Gardner (2010) highlights especially the following five types of intelligence that will be needed for the future: (1) the disciplined mind, (2) the synthesizing mind, (3) the creating mind, (4) the respectful mind, and (5) the ethical mind.

This conception of skills needed for the future challenges the way schools teach, process and disseminate knowledge and develop skills today. The curriculum used in basic education in Finland has often been criticized for having an excessive focus on content and the presentation of information broken down by subject. Does it make use of and construct knowledge in a manner that will help pupils understand everyday life, or do pupils merely have to reproduce information which has been spoon-fed to them in textbooks and which may remain superficial and irrelevant to them? (e.g. Vitikka, 2010).

Based on the values of the new core curriculum and the national goals stipulated in the Education Act and in the Government Decree, the seven areas of extended, cross-cutting (common to all school subjects) competencies based on 21st century skills are described in the new core curriculum. They are:

1. Thinking and learning to learn;
2. Cultural literacy, interaction, and expression;
3. Taking care of oneself, everyday life skills, safety;
4. Multiliteracy;
5. ICT competence;
6. Working life skills and entrepreneurship;
7. Participation, influence, and responsibility for a sustainable future.

All these competences consist of knowledge, skills, values, attitudes and the ability to apply them in different contexts (Vahtivuori-Hänninen et al., 2014).

New Finnish Core Curriculum for Basic Education (2014) strongly emphasizes the role of ICT in the teaching-studying and learning process and school development. It is seen as essential that learning environments take into account that children are living in a complex and globalized world, filled with and modified by different ICTs, media services, and games. The new curriculum also emphasizes that the skills and competencies needed for the exploitation of ICTs must enable the student to grow into an active member of society. The student is treated as an active learner. It is seen crucial that students learn to set goals and solve problems both independently and with others. The new curriculum emphasizes that well-being, balanced development of personality and ability to manage daily life are also important goals of learning. According to the new curriculum, ICTs provide many tools for that and for active and meaningful learning (Vahtivuori-Hänninen et al., 2014).

Educational administrators and other decision-makers in that sector are of one mind that teaching would do well to make more versatile and appropriate use of ICT and the opportunities it affords for developing the skills and competences that will be needed in the future. People are also looking to ICTs for help in renewing the working culture of schools, in supporting a sense of community and collaborative learning and in building teaching and learning environments (National Educational Technology Plan, 2010).

WILL SCHOOL FADE OUT OF YOUNG PEOPLE'S EVERYDAY LIVES?

How can we best take advantage of ICTs and media to improve teaching and learning environments? Or should we ignore the issue completely? Some have claimed that schools will drift farther and farther from the everyday life of children and adolescents if we do not rise to the challenge (Lankinen, 2010).

Teacher education will figure crucially here. A solid command of ICT and a range of media and network environments in teaching seem to be playing an ever-greater role among the basic skills and competencies required of teachers and teacher educators. Everyone qualifying as a teacher has the right to acquire the basic knowledge and know-how needed for using media in a rich variety of ways in different subjects and to achieve a solid grasp of how ICTs can be used pedagogically when designing, implementing and assessing his or her teaching.

One piece of good news in light of recent research is that the opportunities to use ICT in the schools to support teaching and learning have improved. For some schools and teachers, the wide-ranging use of ICT and media in teaching and learning is routine. The doors of the classroom have been opened to the outside world globally, and in the process new opportunities have presented themselves to share and combine competencies and to collaborate. One characteristic of schools that have succeeded in realizing the potential of ICT and making it an integral part of their teaching is that ICT and media are used in every facet of the school's work and

by the entire school community (Kankaanranta, Palonen, Kejonen, & Ärje, 2011; Niemi, Kynäslahti, & Vahtivuori-Hänninen, 2013).

The challenge where equality is concerned is that substantial differences remain among schools, school levels and regions, and that these gaps seem to have widened rather than shrunk (Kankaanranta et al., 2011; Niemi et al., 2013). Considerable efforts are still required before all Finnish children and teachers can be afforded equal access to the same array of learning environments and experiences.

THE NATIONAL PLAN FOR THE EDUCATIONAL USE OF ICTS: SOME PROSPECTS

Finland was quick and timely when it came to introducing ICT in teaching and learning, and the country's significant financial commitments to the endeavour made it a frontrunner internationally in the 1990s. Perhaps one of the most productive efforts on the practical level was the national strategic plan (Finland—Towards an information society, A National Outline) and the related development undertaken by the Ministry of Education and the National Board of Education in 1995. Numerous development projects were launched that could later boast successful outcomes. For example, 75% of the country's teachers took part in OPE.fi alone, a series of technical and pedagogical skills development programs coordinated by the Finnish National Board of Education. Then again, many of the training programmes ended up being attended by the same core of active teachers. This trend in Finland has continued: Some teachers have solid skills and a desire to develop themselves and their work, but good ideas and applications and models for how to do things have yet to spread extensively enough throughout the school system.

International comparisons of the use of media and ICT in teaching show that today Finland falls in the middle of the pack in Europe in the educational use of ICTs (e.g. SITES, 2006; CICERO Learning report, 2008; European Schoolnet, 2009; OECD CERl, 2010). Many municipalities and schools have made brisk progress and some schools represent the best in the field both pedagogically and technically. Innovations and experiential pedagogical models for the educational use of ICTs do support teaching and learning, and classrooms are very well equipped.

Recent years have seen the gaps between schools and between municipalities widen. The rather autonomous way in which municipalities have developed the educational use of ICT has not always meant optimal progress nationwide. Indeed, one reason why progress has slowed in Finland is that the country lacked a clear national-level action programme. The economic investments in infrastructure have not in themselves been sufficient (Kankaanranta, 2011; see also Kozma et al., 2003; Law, Pelgrum, & Plomp, 2008).

The new National Plan for the Educational Use of ICT was published in December 2010. The plan is the outcome of an extensive collaborative project entitled "ICTs in Schools' everyday life", coordinated by the Ministry of Transport and Communications and jointly implemented by the National Board of Education

and the Ministry of Education and Culture. The project involved 20 innovative schools, 13 research units, and experts from business life and municipalities. The report presents the national objectives, as well as general strategic directions and proposed measures.

The report notes that the challenge is to disengage the schools from their present technology-oriented and superficial use of ICT. The educational use of ICT should be a natural facet of all school activities. Its use should proceed from the following considerations: (1) development of learning, mastery, and learning environments, (2) support for pupil growth, (3) the needs of teachers and teaching, and (4) the needs of society and working life.

The following problems were identified at the first stage as the principal challenges facing efforts to develop the educational use of ICT in Finnish schools:

- Insufficient technical infrastructure, which varies from school to school and municipality to municipality, and unsuccessful technical solutions in the schools' learning environments
- A lack of technical and pedagogical support (for teachers and pupils)
- Little use of innovative pedagogical models that support active engagement of the pupil, collaboration and teamwork
- The availability, quality and dissemination of digital learning materials
- Challenges posed to schools' working cultures, sense of community and capacity for collaboration
- Development of municipal school authorities, the competencies of school directors and schools' management practices, the challenge of change management and communicative competence
- A lack of partnerships between businesses and schools that are geared towards organizing schools' services
- Bringing the educational use of ICT in teaching up to date in teacher training

The Finnish national plan (2010) clearly pointed out that a systemic change is required in which the educational system and the way in which schools work would be revamped to correspond to the modern conception of learning. In implementing the changes, the recommendation is that existing structures be used, such as the current bases of the curriculum. Implementation of the plan and achievement of the desired results will require cooperation between the public sector in its entirety, the business community, educational providers and the schools.

The aim is for all Finnish schools to bring to bear in a stimulating way the tools and opportunities which ICT offers for supporting teaching and learning. If the schools succeed, every pupil will experience new, enabling learning environments and ways of working.

The strategic plan points out that the change will require up-to-date infrastructure and equipment in the schools. The technical solutions chosen must be of high quality and those choices must give due consideration to sustainable development. Also needed are solid technical and pedagogical support services for teachers and pupils

in all schools. In developing the working culture of schools, change management and a strengthening of cooperation and a sense of community will be crucial; two means to this end are the use of co-teaching and peer coaching models. Net-based high-quality and experiential materials should be readily available and accessible to everyone. Teacher training should be developed and supported in the area of educational use of ICTs.

It is still possible to graduate as a qualified teacher in Finland without being able to use ICT innovatively in teaching or being particularly familiar with media skills. According to a report of the OECD's Centre for Educational Research and Innovation (CERI) entitled "New Millennium Learners 2010", those training to become teachers still do not acquire sufficient competence in the educational use of ICT during their studies (Meisalo et al., 2010). Teacher trainers have positive attitudes, but the potential of ICT is tapped resourcefully mainly when doing research. The skills of recent teacher training graduates in Finland vary from institution to institution. In-service teachers also require constant and inclusive support in their work on how to use ICTs innovatively (e.g. Ilomäki & Lakkala, 2011; Kankaanranta et al., 2011).

The national strategic plan further states that teacher training departments and other units providing training for teachers would do well to invest in up-to-date tools that match those of the school environments in which teachers will be working. A working group of the Ministry of Education and Culture proposed that state aid be directed to that purpose in its report titled "The Information Society Development Program for Education, Training and Research 2010". It is important that pre-service teachers be able to familiarize themselves during their studies with learning environments that are part of the daily routine in the schools. Degree requirements and practice teaching should also be reviewed to ascertain whether ICT has been integrated appropriately in all degree programmes.

It is challenges of this nature that have been the focus of the national research project OPTEK (Educational Technology in Schools' Everyday Life Research project). The project is examining and developing innovative solutions and models for the application and use of ICT and electronic media in schools on an everyday basis. The project, financed mainly by TEKES (the Finnish Funding Agency for Technology and Innovation), was launched in January 2009 and ended in May 2011. The first results were published in February 2011 in what was designed as a co-publication with the National Educational Technology Plan, which came out in December of 2010.

RECENT RESEARCH FINDINGS OF THE PRESENT STATE ABOUT THE EDUCATIONAL USE OF ICTS IN FINLAND

The research done in OPTEK project indicates that when ICT is used in teaching and learning, it aids in illustrating, enlivening and enriching content and in enabling distance and mobile learning. The research showed that ICT can support cooperative

learning, reasoning, abstract inference and visual perception. Games and simulations when used innovatively can allow pupils to practice problem-solving abilities and understand authentic and complex phenomena. The aim in using ICT is to enhance and enrich study environments that support skills for the future alongside the physical learning environment and face-to-face interaction which pupils have in the schools (Tella, Multisilta, Ruokamo, & Smeds, 2005; Kynäslahti & Seppälä, 2004; Kangas, Sintonen, & Lundvall, 2008; Vahtivuori-Hänninen et al., 2005; Tuomi & Multisilta, 2011; Sairanen et al., 2011; Lankinen, 2010; Kankaanranta & Vahtivuori-Hänninen, 2011; National Educational Technology Plan, 2010; Kotilainen, 2011; Vähähyyppä, 2010; Rajala et al., 2011; Sallasmaa et al., 2011).

According to a recent study, one favourable development is that rectors have a more positive view of the importance of ICT in the everyday work of the school than previously. They recognize the need for change and are committed to implementing the school's shared visions and a functioning working culture in order to improve pupils' future skills. Yet there are still considerable differences in how ICT is used, although in general opportunities to use it have improved (Kankaanranta et al., 2011).

The use of digital video technology is not difficult to pupils, and it can be learned collaboratively. Collaborative content production motivates pupils to plan, perform, film and edit. In producing content using digital video, a number of different technologies and models can be brought to bear. A study carried out at the University of Oulu observed that this affords children an opportunity to develop their 21st century citizen skills, for example teamwork and interactive skills, as well as information and media literacy (Palmgren-Neuvonen, Kumpulainen, & Vehkaperä, 2011; Kotilainen, 2011).

Mobile social media can easily be used as tools for school projects. Over one-third of the pupils who participated in the mobile learning study felt that it was possible to learn to use a mobile video distribution service; well over one-half preferred mobile learning to traditional ways of working in school. Fun and creativity should not be suppressed; they should be encouraged. Incorporating mobile devices into teaching requires smooth operation of the technology involved as well as the appropriate training and motivating of teachers (Tuomi & Multisilta, 2011).

A study conducted by the Media Education Research Group at the University of Helsinki observed that learning in a variety of spaces, and perhaps even at different times, promotes children's self-directedness: working in a mobile environment places an emphasis on the user's own decision-making, for using the tools, in allowing for new solutions and real-time help, enabling pupils to work using a process of trial and error. Mobility brings pupils flexibility with respect to time and location, because they study physically and virtually in different spaces (Kotilainen, 2011; Mylläri et al., 2011; see also Kynäslahti & Seppälä, 2004; Koskimaa et al., 2007; Kynäslahti et al., 2008).

All of the technology we need for educational purposes already exists. At the beginning of the 2000s, the role of ICT in teaching and learning was very much that of an add-on, something superimposed on ordinary teaching. Now that technology

and media are considered an integral part of the work of the school: it has made it possible to teach less common subjects; it supports experiential learning; and it serves to reinforce cooperation between the home and the school and the partnership they form in a child's education and upbringing. School is seen as an active component of society and a place where children and adolescents learn the skills and competencies that they will need not only in their future studies but also in their personal growth, everyday lives and future work. Underpinning the use of ICT in teaching are considerations of equality, a sense of community and developing a capacity for collaboration and participation. The school works within the immediate community but at the same time it is part of the global world. Using ICT in a multi-dimensional way we can bring the whole world within the reach of school pupils.

CONCLUSION

In the 1990s Finland was one of the leading information societies in the world. In order to develop Finland as an ubiquitous information society, national strategies and guidelines were created. With the new millennium, the first wave of ICT projects came to an end. It seems that there has been a measure of embarrassment within the first wave countries—watching other countries rapidly develop the educational use of ICT, these first-wave countries have been sensitive, even worried, about their position in international comparisons. In Finland, we are in a situation in which we have to think again about national level strategies and governmental programmes in order to develop teaching and learning as well as the whole educational system benefiting from the use of ICT.

We have great potential for doing this. Finland has talented teachers and research-based teacher education with the know-how needed to develop the educational use of ICT. We now have national guidelines for educational use of ICT. We have a brisk national core curriculum, which crystallizes the vision of education for the future and the necessary expertise that will be needed in Finnish society. In the new curriculum the role of ICT is seen to be crucial. ICT is serving as a useful pedagogical tool and learning environment to achieve all of the new goals. Finland has a great opportunity to show what the new teaching, studying and learning environments and the new learning culture of future schools can be when they are at their best.

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