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THE UPTAKE AND USE OF DIGITAL TECHNOLOGIES IN A 1:1 LAPTOP INITIATIVE EXPLORING THE PARENT PERSPECTIVE

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Abstract

As digital technologies have spread rapidly through all parts of society, these technologies have been slower to gain foothold in schools. The uptake and use of digital technologies and the conditions for technology enhanced learning and school development were studied in the research project Unos Umeå, a joint One-to-One (1:1) research project between Umeå University and the municipality of Umeå in Sweden. In two schools, an upper-secondary school and a compulsory school, the work with digital technologies in practice in the classroom was studied for a period of three years from the student, teacher, school leader and school perspectives. This paper will provide further insight into this work, by providing the parent perspective of this 1:1 initiative. Using the Ecology of Resources Model (Luckin, 2010) for analysis, possibilities were seen in using the laptop as a pedagogical tool for structure and support in learning activities, responsibility for school work, and issues of digital equality. Challenges regarded increased laptop use, difficulties in monitoring schoolwork and students' focus on schoolwork in the classroom environment. It is concluded that the parent perspective provides important insights for teachers and schools leaders which may help in supporting students' learning through the use of digital technologies in the classroom.

Introduction

The uptake and use of digital technologies continues to increase in schools, with hopes for Technology Enhanced Learning (TEL) supporting student outcomes. While policy puts forth the need for students to gain 21st-century skills such as critical thinking, problem solving and digital competence in the digitalised classroom (European Commission, 2010; Organisation for Economic Co-operation and Development 2009, 2012), the academic gains appear to be somewhat elusive (cf. Cuban, 2013; Livingstone, 2012). In many schools this expansion takes place through the implementation of laptops or tablets in what is referred to as One to One (1:1) initiatives, meaning one laptop per student (Richardson et al., 2013; Valiente, 2010). At the same time researchers note that there appears to be a gap between the positive intentions put forth in policy and actual use in practice (cf. McGarr, 2009; Olofsson, Lindberg, Fransson & Hauge, 2015, Säljö, 2010). Overall the work to support 21st-century skills through providing basic and more advanced ICT skills for the major stakeholders in these initiatives, i.e. students, teachers and school leaders is reported in the international literature (cf. Cuban, 2013; Vrasidas, 2014; Warschauer et al., 2014; Williams, 2008) as a way for the uptake of digital technologies to provide opportunities for TEL and school change (Fullan, 2001; Olofsson et al. 2015). Studies in the Swedish context (Fleischer, 2013; Grönlund, 2014; Tallvid, 2015) are in line with international results. However, while the students, teachers and school leader perspectives are in focus in the literature, one important stakeholder, parents, seems to be lacking. Thus, the possibilities and challenges parents see regarding the uptake and use of digital technologies in the classroom appears to be a relatively unexplored area.

Aim and research questions

The aim of this paper is to explore, identify and describe the possibilities and challenges related to the uptake and use of digital technologies in a 1:1 laptop initiative from the parent perspective. The following two research questions are hereby put forward:

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- What challenges and possibilities are expressed in regard to the uptake and use of digital technologies in the classroom?

- Using the Ecology of Resources Model (Luckin, 2010) and the theoretical concept of filters, how can these possibilities and challenges be understood?

Literature Review

In regard to the uptake and used of digital technologies in the classroom, as noted above, many studies have focused on the 1:1 classroom context (cf. Cuban, 2013; Lei & Zhao, 2008; Penuell, 2006; Richardson et al., 2013). A recent research overview by Zheng, Warschauer, Lin & Chang (2016) reports positive findings related to 1:1, noting an expected continued expansion of 1:1 in K12 schools, but also calls for more systematic research in the area. Studies often involve students, teachers, school leaders and the schools as organizations. These stakeholders are seen as the main partners in the implementation process of digital technologies and only on occasion, include parents (Mooij & Smeets, 2001), although ICT integration efforts should perhaps be coordinated with students' home computer use (Vekiri, 2010). This would also help in proving a learning environment with digital technologies, which ideally would support a seamless transition between the home and school. However, this requires the support of both schools and parents (Kong & Li, 2013).

As policy pushes to focus on access, integration and developing frameworks for use and curricula, students' perceptions and digital competence continue to develop outside the classroom, rather than within the classroom (Aesert & van Braak, 2014). These researchers mean that teachers' attitudes and experiences do not contribute to students' improved ICT skills but that the home environment including parents' ICT attitudes and experiences does. These findings are in line with Zhong (2011), reporting that the out of school context in which children use ICT could be a more powerful predictor for ICT efficacy than the school context. According to parents, attitudes concerning ICT competence and success for children appear to be related, although there are socioeconomic differences in how parents conceive the relationship between computers and success (Scholfied Clark, Demont-Heinrich & Webber, 2005). Schools' possibilities as well as parents' level of education and occupational area also have effects on differences in access to ICT and use (Pereira, 2016). Parents' expectations are of importance as well as. Using a laptop is seen to be important in keeping up with life in a modern society as well as academic achievement and a strong social imperative of the information society (Pereira, 2016).

Pereira (2016) notes the importance of access, focusing on the importance of the family in the way children access and used ICT. In a study of small children entering nursery school having access, however, was not the same as them always being able to use digital technologies, because of parents' intervention and or modelling (O'Hara, 2011). Parents have impact by giving children the chance to use ICT, with supervision, by playing with children with ICT resources as well as drawing children's attention to ICT in the home and the world around them (O'Hara, 2011). It appears that parental ICT attitudes are related to primary school pupils' ICT competences, and classroom use is related to pupils' competences (Aesert, van Braak, van Nijlen & Vanderlinde, 2015). This would mean that parents' ICT attitudes seem to affect how they support and regulate children's use (Vekiri, 2010). For example, in a study regarding Bring Your Own Device (BYOD) parents were concerned with issues of equity, ethical use, safety and device security (Kiger & Herro, 2015). These concerns were also in focus in a study by Kong & Li (2013), in which parents expressed what could be described as a shift in concern over use to concern over how to build and cultivate proper attitudes and use. Many parents express concerns regarding the use of ICT as entertainment and not as educational media (Scholfied Clark, Demont-Heinrich & Webber, 2005). However, concerns regarding use can be seen a possibility, as understanding and addressing parents' concerns may also serve to increase resources as well as support teaching digital citizenship (Kiger & Herro, 2015). Schools can capitalize on parental interaction to increase the quality of parental involvement in school and out of school. Using family resources may increase parental awareness of potential benefits and risks (Vekiri, 2010).

Digital technologies can be seen as tools to support and assist teachers' work and students' learning, but also tools for crossing borders and creating a culture of sharing between schools, parents and other actors in the community (Niemi, Kynäslahti, & Vahtivuori-Hänninen, 2013). It appears that ICT alignment between parents and principals regarding preferences and expectation concerning the uptake and use of digital technologies improves parent satisfaction with the school whereas misalignment appears to have the opposite effect (Heath, Maghrabi & Carr, 2015). Schools may provide information through increased modes of communication as a way to open communications with families and communities, but this says nothing of the quality of the information (Hohlfeld, Ritzhaupt & Barron, 2010). Collaboration between schools and parents to foster information literacy also an issue. A high level of expectation among school heads for parental support reflects the need for schools to initiate cooperation with parents to extend TEL to the home setting (Kong & Li, 2013). Further Kong and Li, (2013), discuss the need to support home school collaboration in order to provide opportunities and to mobilize parents for supporting learning at home.

Context

The Unos Umeå research project in Umeå, Sweden followed a 1:1 initiative in two schools in the municipality of Umeå in order to study the uptake and use of digital technologies and the conditions for TEL and educational change in K-12 schools during 2011-2014. The research project was a joint project between Umeå University and the municipality of Umeå. The first school that participated in the research project can be described as a large upper secondary school. The second school that participated in the research project can be described as a middle-sized compulsory school. The teachers and school leaders in the research project were either teachers, mentors or school leaders for the four classes involved in the research project. The findings in this paper add on to previous studies in the Unos Umeå research project from student, teacher and school leader perspectives (Håkansson Lindqvist, 2015). Aspiring to provide insight in yet another important stakeholder perspective, the parent perspective, this paper explores the possibilities and challenges perceived by the parents of the compulsory school students involved in the research project.

Method

In the Unos Umeå research project, a 1:1 initiative in two schools was followed for a period of three years. The research design involved a case study approach as described in the literature (Yin, 2009). The methods of data collection in the overall research project were surveys, interviews and classroom observations. The data analyzed in this paper was collected during early spring 2012, at the end of the first term of the 1:1 initiative at the compulsory school involved in the research project. Surveys were sent to the parents of the students in the two classes which were involved in the research project. The survey was made up of 10 questions, including open questions as well as the possibility to write own comments. The survey was sent to 56 households (94 parents of 52 students) and 26 were returned. One blank survey was discarded, leaving 25 surveys remaining. These surveys are the empirical base of this study.

Theoretical Framework

The Ecology of Resources Model (Luckin, 2010) is built on learning as an interaction between the individual and the sociocultural environment (cf. Engeström, 1987; Säljö, 2000; Vygotsky, 1978). The model places the learner in the middle, surrounded by the three resource elements of *Environment, Knowledge and Skills*, as well as *Tools and People*. These resources are available to the learner, either through direct or indirect interaction. As the learner is placed in the central position of this learning activity, demands can be put on the surrounding environment, context and design (Luckin, 2010). An important theoretical concept in the Ecology of Resources Model is *filters*. According to Luckin (2010), the resources available to the learner may be restrained, impeded or enabled. The process of

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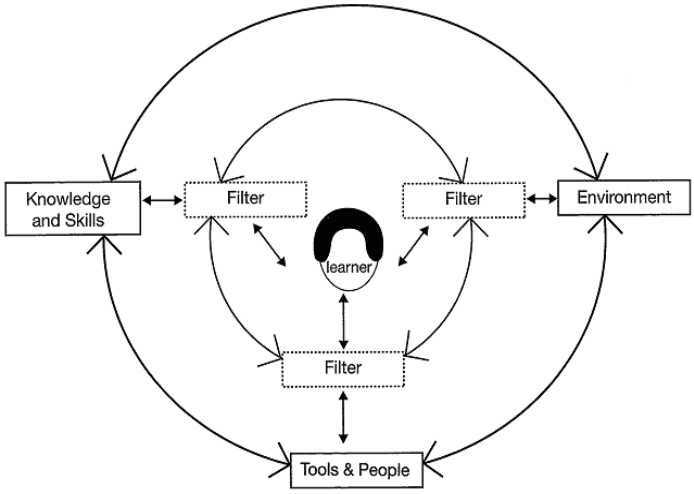
identifying and studying filters can be used both to strengthen the design of as well as to ameliorate negative effects in technology-rich learning environments (Luckin, 2010). The model is illustrated in Figure 1 below.

Figure 1 The Ecology of Resources Model (Luckin, 2010). Elements and their filters.



Therefore, identifying and making filters visible can be seen as an important part of identifying the possibilities and challenges related to the uptake and use of digital technologies, as in the case of a 1:1 initiative. In this paper, parents are placed in the center of the model, as a way to explore the parent perspective and provide their view of the uptake and use of digital technologies in the classroom.

Results

In this section the survey results are presented. First, the overall survey results are presented. Thereafter, parents' comments to the open questions are presented in the form of possibilities and challenges.

The survey was answered by 14 women and 11 men. In total, 24 parents viewed the 1:1 laptop initiative as being very positive or positive, with only one parent being rather negative about the initiative. When asked if their view had changed since the start of the initiative, the majority of the parents noted no change or a change for the better. Some 25% of the parents reported a change for the worse, while two parents were indifferent and one parent did not answer.

The majority of the parents found the rules for the use of the laptops at school to be reasonable. One parent thought that the rules were too strict and six parents reported that the rules were too lenient. Three parents were not aware of what rules there were, and the remaining two parents did not answer.
A total of 22 parents reported that their children took their laptop home every day for school work. Two parents noted that their children brought their laptop home a few times a week, and the same number reported that they took their laptop home a few times a month. One parent reported that their child never took the laptop home. If their children used their laptop too often at home, 12 parents answered yes and 8 parents sometimes, while 3 answered no. One parent did not answer.

How the 1:1 initiative had impacted on learning, collaboration with classmates, schoolwork being easier or more fun, being more responsible for schoolwork and needing less help with homework was reported as followed in Table 1 below.

Table 1 Parents' views on the impact of the 1:1 initiative on learning, collarboration,

schoolwork and homework

Impact on learning collaboration, schoolwork and homework	Fully agree or agree to some extent	No change	Do not agree	No answer	Total
Improved learning	15 (60%)	5 (20%)	3 (12%)	2 (8%)	25
Increased collaboration with schoolmates	10 (40%)	8 (32%)	3 (12%)	4 (16%)	25
Schoolwork easier	14 (56%)	5 (20%)	4 (16%)	2 (8%)	25
Schoolwork more fun	18 (72%)	1 (4%)	3 (12%)	3 (12%)	25
More responsible for schoolwork	10 (40%)	7 (28%)	6 (24%)	2 (8%)	25
Needs less help with homework	7 (28%)	12 (48%)	4 (16%)	2 (8%)	25 (100%)

In summary, the majority of parents who answered this survey saw the 1:1 initiative as offering possibilities for improved learning (60%) and making schoolwork easier (56%) and more fun (72%) for their children. While some parents noted increased collaboration (40%) and increased responsibility (40%), many reported no change in these areas (collaboration no change 32%, responsibility no change 28%). If children needed less help with their home work was seen to be unchanged by many parents (48%).

Possibilities

When noting what parents regarded as possibilities related the 1:1 initiative, the answers could be placed into the following categories: *access, knowledge, the laptops as a pedagogical tool and communication*.

Access

One of the possibilities related to the laptops was related to access. Parents saw that all of the children had the same possibility to use the laptop as a tool in the classroom:

> That children whose parents do not have the money, or who do not have access to laptops due to other things, all children have access to laptops. All of the children have the same prerequisites in the 1:1 project. Good! (Parent C)

Another parent noted possibilities in access at home, as a result of not having to share the laptop with siblings.

Knowledge

Many of the parents' comments were related to knowledge. Here, parents saw possibilities in using the laptop as a pedagogical tool: "that they reflect and use the laptop as a tool for help" (Parent D). Other possibilities were that it was easier to search and find information, become laptop savvy, write more easily, and be better structured in their work. One parent summarised this as: "That students learn both to use the laptop and access the information available provided on the Internet" (Parent S). Parents also noted the need for their children to have skills in laptop use as a result of future demands: "They get used to a work method and tools which are what is used in society" (Parent Q). This category also included comments regarding parents' thoughts about responsibilities and learning: "That the student takes a greater responsibility and shows more interest in their own learning" (Parent T), as well as increasing knowledge through learning to be responsible for the laptop.

The laptop as a pedagogical tool

The educational value of the laptop was noted by several parents: ”The children have a good pedagogical tool” (Parent R). Possibilities were also seen in the programmes in the laptop such as spell check program and reading texts out loud. The laptop was also seen as a tool for structuring work: ”That all the assignments, notes, etc. are located in one place” (Parent F) with all information being close by: “School materials are always accessible, i.e. there is not the risk that he has forgotten his book” (Parent K). Possibilities were seen in study technique in general as well as producing texts with a nice layout. One parent noted the wide number of programmes available in the laptop: “there are many tools for help on the laptop, which is positive” (Parent H). One parent with a child with special needs commented: “For my child who has a simpler form of reading and writing disability, the laptop is a fantastic tool for help” (Parent T).

Communication

The last category of comments was related to communication. Parents noted that communication between teachers and students improved. Another parent noted possibilities for children to communicate with each other: “That everyone in the class can speak to each other on the Internet, easier than calling” (Parent B). Communication between home and school was also seen to be important: “That all information, providing that the teachers put out information, is more accessible” (Parent T). Another parent noted that they their child had recently started at the school, and had not received any information about the project (Parent A).

Challenges

When noting what parents regarded as challenges related the 1:1 initiative, the answers could be placed into the following categories: *access, knowledge, physical aspects and responsibility*.

Access

Access to the laptops was also seen to be a challenge. Parents noted that the laptops were always accessible which implied challenges: “Too large a focus on the laptop. [Children] can’t work when there is something wrong with the laptop” (Parent W). This included the element of distraction as well. This was noted in difficulties in concentrating on own work in the classroom:”He has said that he is distracted in the classroom, since he sits in the back and sees all of the laptop screens in front of him, often with games” (Parent J). Distractions related to collective work were also reported in the classroom environment: “It is difficult to concentrate on the right thing when e-mails alerts are on and chatting is often going on. You can turn it off, but it is difficult” (Parent K). Another distraction noted non-school activities such as access to games, both in the classroom and on breaks: “More individual gaming, and group pressure, to game during lunch, since access is free” (Parent I). Another parent commented:

> Access can be misused. That the use of the laptop for schoolwork is only a small fraction, and the rest is up to the student’s own disposal. And in the teens, it is not searching for knowledge on the web which is prioritised, but things that are fun, such as games, Facebook, Youtube, etc. (Parent C)

Knowledge

The challenges regarding knowledge were related to children no longer reading books and not being able to write by hand. One parent noted effects on lessons, as they often started late because the laptops weren’t turned off. Another parent hoped for a more extended use of the laptop: “Few good tasks, not often good homework assignments for using the laptop as a proper tool. Too bad that it is mostly reading and writing” (Parent B). Another parent reflected upon what knowledge is lost:

> As always, when you implement something new, you lose something else. In this case, it is the possibilities for breathing space and reflection, when Word fixes the spelling and the structure and the disposition, and becomes something that you can fix afterwards. The texts

> are not thought through before they are written – by the good students - first at the end of the process. Many [children] can't cope at all. (Parent Q)

Another parent saw the laptop as a challenge for children with special needs: "A child who needs extra help should not have a laptop – everything is too unclear, they cannot set guidelines for how to learn things" (Parent P). Another parent brought up the need for knowledge about social media and the Internet, seeing "Too little dialogue about social media on the Internet, for example Facebook" (Parent X). This was summed up by another parent:

> As I usually ask my son if he shouldn't have his laptop with him to school, but the answer is often no! My experience is that the laptop is not used very often in teaching. It seems that it is more something that students themselves should use after lessons" (Parent C)

Physical aspects

Parents also saw challenges in the physical aspects, or ergonomical aspects of the work with the laptops. These were related to more sitting still in front of the laptop, the work with the laptop being tiring as well as increased use of the laptop in school and at home: "The level of laptop use becomes too high" (Parent H). Parents also noted concerns about children carrying the laptop back and forth to school: "The need to carry the company back and forth is very strenuous" (Parent W) and "Too heavy for growing backs to carry laptops, books and gym clothes" (Parent M). Other stress-related issues were technical problems, such as the laptops having been used by another group of students before, as well as problems with hard drives: "My son had a hard drive crash and the school's backup wasn't working, which led to a big problem and a stressed student"(Parent Y).

Responsibility

Other challenges noted by parents were in regard to responsibility. One parent noted that the responsibility of taking care of an expensive laptop was too high for the children, considering the risk of theft. Another parent noted that the work with the laptop places too much responsibility on the student and provided the parent with too little insight: "I have no idea/poor insight into what need to be done, [I] don't know if homework has been done or not. Too much responsibility is put on the student. Not on the teacher or mentor" (Parent Y).

Discussion

In this section, the results regarding to the uptake and use of digital technologies in the 1:1 classroom from the parent perspective are analysed using the theoretical concept of filters and the resource elements Environment, Knowledge and Skills, and Tools and People.

Environment

In the resource element Environment, parents are positive to the 1:1 initiative and can see many possibilities for supporting children's learning with laptops in the classroom and can in this sense be considered to be a resource (cf. Vekiri, 2010; Niemi, Kynäslahti, & Vahtivuori-Hänninen, 2013). One filter identified here is the classroom environment in itself. If non-school activities and distractions such as e-mail alerts and text message sounds disturb the classroom work environment, as expressed by parents in this study, it is most likely that students till not have the opportunity to focus on schoolwork as intended. Discussing individual and classroom laptop rules may be of importance in this work. Although many of the parents in this study see the classroom rules for laptop use are reasonable, there appears to be concern about balance of laptop use for school and non-school activities in the classroom (cf. Kiger & Herro, 2015) and the need for an increased dialogue regarding social media and Internet use. Another filter which is manifested here is the physical environment, such as too much laptop use as well as carrying heavy books and laptops. These factors could affect the learning environment for students as well. In this study, this was expressed by one parent who noted that too much laptop use makes the students tired. Alleviating this filter will most likely be of importance for teachers in seeing that laptop use in the lessons during the day is spread out and

supports learning, by providing well-designed and thought through lessons which use the possibilities which the laptops provide. This may involve closing the laptop during certain tasks, in order to create time for reflection. For teachers, this work will most likely demand time and time for professional development (cf. Vrasidas, 2015). This would in turn perhaps, as questioned by the parents in this study, increase the use of the laptops for schoolwork in school and homework at home and perhaps create possibilities for bridging the home and school learning environments (cf. Aesert & von Braak, 2014; Zhong, 2011) and collaboration (Vekiri, 2010) through the alignment of information (cf. Heath, Maghrabi & Carr, 2015). Time is most likely also necessary for teachers to provide the necessary schoolwork-related information, which the parents in this study ask for, that is of good quality (cf. Hohlfeld, Ritzhaupt & Barron, 2010).

Knowledge and Skills

In this resource element, Knowledge and Skills, parents see possibilities in the use of the laptops for gaining both subject knowledge as well as skills in laptop use. Therefore, access to the laptops for non-schoolwork activities could said to manifest a filter in this resource element. Free disposal of Internet by students, as expressed by one parent in this study, will most likely have impact on pedagogical use and weaken the possibilities for attaining increased knowledge and ICT-skills for students, as the laptop is not used as a pedagogical tool in the classroom (cf. Kiger & Herro, 2015; Schofield Clark, Demont-Heinrich, & Webber, 2005). The parents in this study expressed the lack of traditional school skills such as handwriting, which are perhaps also important for students to acquire in the classroom. Further,, the use of the laptops for non-school work, as manifested as a filter, could be seen to take over the possibilities for knowledge and skills achieved by pedagogical use of the laptop if the goals of policy for digital competence are to be attained (EC, 2013; OECD, 2009; 2013). These skills appear to be related to parents' ideas regarding the need for skills in modern society and for their children's success in school and society (Pereira, 2016; Schofield Clark, Demont-Heinrich, & Webber, 2005). This, however, is a pedagogical concern for teachers who plan and design classroom work with the laptops for students (cf. Vrasidas, 2015). This will most likely set demands on teachers, to develop their teaching, to move beyond what one parent expressed as using the laptop only for reading and writing. Yet another demand on teachers will be to post information and make it accessible for parents, in order to keep them updated on information which is important for students, such as insight into schoolwork and homework assignments. Teachers' lack of time to post information can be seen as manifesting a filter, from a parent perspective, as it impedes the possibilities for parents to communicate with teachers and leading to poor insight, as expressed by one parent in this study. This may also hinder parents from taking on the responsibility of helping their children with schoolwork and homework as well as possibilities to take advantage of students' and parents' skills and for supporting knowledge and skills (Kong & Li, 2013).

Tools and People

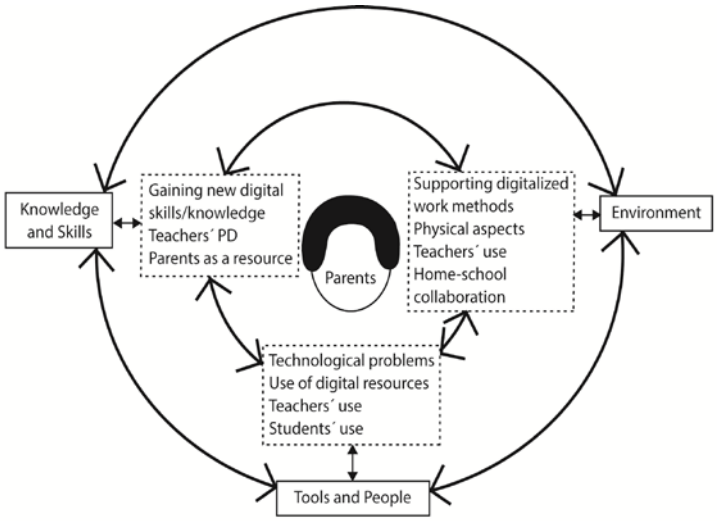
In the resource environment, filters can be seen as manifested in technological problems with the laptops. For the work with the laptops to work well in the classroom, the laptops must be in good condition and support available for students when necessary. Another filter can be identified in the non-use of all of the programmes which may facilitate learning such as spell checks, having texts read aloud and other resources provided on the laptop and through the Internet. It is most likely that students must be reminded that these tools are available in the laptops by teachers. This use may require professional development for teachers (cf. Vrasidas, 2015), but also new skills for parents to use these tools in the home environment. Therefore, teachers and can be considered to manifest filters in this resource element. In this study, this is seen in the contrasting views regarding students with special needs. Laptops provide the students with the tools, but is important that they receive the help and support needed in using the laptops for using these tools by both teachers and parents. While the parents in this study realised the importance of these tools (cf. Kiger & Herro, 2015; Schofield Clark, Demont-Heinrich, & Webber, 2005), and can perhaps to certain extent support this use at home, it will be up to the teacher to support this use in the classroom for learning. For students, supportive and competent teachers will be necessary as well, otherwise teachers can also be identified as filters in this

resource element. Finally, regarding uptake and use the lack of the use of the laptop can also be said to manifest a filter. Although the majority of the parents in this study see the rules for use, in the classroom as reasonable, there were also concerns regarding non-educational related to disruptions in the classroom. Here, parents attitudes (cf. Aesert, van Braak, van Nijlen & Vanderlinde, 2015; O'Hara, 2011) and parental involvement in school and out of school for supporting awareness regarding use for digital competence and citizenship may also be of importance (Kiger & Herro, 2015; Vekiri, 2010).

Discussion in summary

In summary, the uptake and use of digital technologies in the 1:1 classroom from the parent perspective, the findings can summarised as supporting the digitalised learning environment (resource element Environment), supporting and developing ICT skills (resource element Knowledge and Skills) and supporting the uptake and use of digital technologies (resource element Tools and People). Using the Ecology of Resources Model (Luckin, 2010), this can be illustrated as in Figure 2 below.

Figure 2 Possibilities and Challenges from Parent Perspective using the Ecology of Resources Model (2010)



Conclusions and Practical Implications

The aim of this study was to explore the challenges and possibilities regarding the uptake and use of digital technologies in the classroom in a 1:1 initiative. The use of the Ecology of Resources Model (Luckin, 2010) and the theoretical concept of filters, appears to have been fruitful in understanding these possibilities and challenges.

One of the possibilities which parents bring forward related to this 1:1 initiative is digital equality. Several parents note that the laptops provided the children, all children, the possibility to gain knowledge and 21st century skills through the use of the laptop as well as finding support in structure in their studies. Many parents noted that their children think that learning with the laptop is more fun. However, this all depends on how the laptop is used in the classroom. If the laptop is used for thought through assignments designed by teachers with the focus on gaining knowledge, ICT-skills, and using the resources provided on the laptops, then digital equality and digital competence will most likely be achieved. If this is not the case, it is possible that students who need extra support in their laptop use as an educational tool may fall behind in the digital classroom. As expressed in this study by parents with students with special needs, the laptop offers fantastic possibilities, but at the same, the time teacher support is necessary.

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One of the main challenges which concerns parents are questions related to responsibility. One question is what responsibilities teachers have for teaching with the laptops and informing parents of assignments and homework. Another question is what responsibilities parents have for seeing that their children have their laptops with them at school, use them as a pedagogical tool for schoolwork at home and that they as parents take part information from teachers. Further which responsibility and how much responsibility can be placed on the students is of interest explore. Finally, another question is the overall responsibility for increased laptop use and the possible physical effects related to, for example, long days working with the laptop, carrying heavy books and laptops and stress, which this may imply for these students. How these challenges are taken on will require collaboration between school leaders, teachers and parents, as they together take on the responsibility for providing children the best possible conditions for learning with laptops and TEL.

Finally, the uptake and use of digital technologies in the classroom appears to provide possibilities for parents to gain insight into schoolwork and homework. However, if the school environment and the home environment are to be bridged, teachers will need to provide the necessary information to support this work in order to increase parental involvement and give parents the opportunity to take on this responsibility. At the same time students' skills that they have acquired in the home environment should perhaps also be seen as a learning possibility in the classroom.

Future Research

This paper provide insights into parents' perspectives regarding the uptake and use of digital technologies in the classroom in a 1:1 perspective. Interesting research questions to study would be home school information and collaboration as well as exploring possibilities to see parents as a resource in the uptake and use of digital technologies for supporting children's schoolwork and homework. Another interesting perspective to study would be how the work with digital technologies in the classroom and at home could support children with special needs. Further, as this was a small study, it would be interesting to explore a much larger sample of parents' views of the uptake and use of digital technologies in the classroom, the conditions for TEL and how these views change over time.

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References

Aesaert, K., & van Braak, J. (2014). Exploring factors related to primary school pupils' ICT self-efficacy: A multilevel approach. *Computers in Human Behavior, 41*, 327-341.

Aesaert, K., van Braak, J., Van Nijlen, D., & Vanderlinde, R. (2015). Primary school pupils' ICT competences: Extensive model and scale development. *Computers & Education, 81*, 326-344.

Balanskat, A., Bannister, D., Hertz, H., Sigillò, E., & Vuorikari, R. (2013). *Overview and analysis of 1:1 learning initiatives in Europe*. Luxembourg, Luxembourg: Publications Office of the European Union.

Cuban, L. (2013). *Inside the black box of classroom practice: Change without reform in American education*. Cambridge, MA: Harvard Education Press.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki, Finland: Orienta-Konsultit Oy.

European Commission (EC). (2010). *A digital agenda for Europe*. Retrieved from June 22, 2016 from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R(01)&from=EN

Fleischer, H. (2013). *En elev - en dator: Kunskapsbildningens kvalitet och villkor i den datoriserade skolan* [One student - one computer: The quality of and conditions for the computerized school]. (Doctoral thesis, School of Education and Communication, 21), Jönköping, Sweden: Högskolan för lärande och kommunikation.

Fullan, M. (2001). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.

Grönlund, Å. (2014). Att förändra skolan med teknik: Bortom ”en dator per elev”. [To change school with technology: Beyond one laptop per student]. Örebro, Sweden: Örebro universitet.

Heath, D., Maghrabi, R., & Carr, N. (2015). Implications of Information and Communication Technologies (ICT) for School-Home Communication. *Journal of Information Technology Education: Research, 14*, 363-395.

Hohlfeld, T. N., Ritzhaupt, A. D., & Barron, A. E. (2010). Connecting schools, community, and family with ICT: Four-year trends related to school level and SES of public schools in Florida. *Computers & Education, 55*(1), 391-405.

Kampylis, P., & Punie, Y. (2013). *Overview and analysis of 1: 1 learning initiatives in Europe*. Brussels, Belgium: Publications Office.

Håkansson Lindqvist, M. J. P. (2015). Conditions for Technology Enhanced Learning and Educational Change: A case study of a 1:1 initiative. (Doctoral dissertation, Department of Education, 114). Umeå: Umeå universitet.

Kiger, D., & Herro, D. (2015). Bring your own device: Parental guidance (PG) suggested. *TechTrends, 59*(5), 51-61.

Kong, S. C., & Li, K. M. (2009). Collaboration between school and parents to foster information literacy: Learning in the information society. *Computers & Education, 52*(2), 275-282.

Lei, J., & Zhao, Y. (2008). One-to-one computing: What does it bring to schools? *Journal of Educational Computing Research, 39*(2), 97-122.

Livingstone, S. (2012). Critical reflections on the benefits of ICT in education. *Oxford Review of Education, 38*(1), 9-24.

Luckin, R. (2010). *Re-designing learning contexts: Technology-rich, learner-centred ecologies*. London, England: Routledge.

McGarr, O. (2009). The development of ICT across the curriculum in Irish schools: A historical perspective. *British Journal of Educational Technology, 40*(6), 1094–1108.

Mooij, T., & Smeets, E. (2001). Modelling and supporting ICT implementation in secondary schools. *Computers & Education, 36*(3), 265-281.

Niemi, H., Kynäslahti, H., & Vahtivuori-Hänninen, S. (2013). Towards ICT in everyday life in Finnish schools: seeking conditions for good practices. *Learning, Media and Technology, 38*(1), 57-71.

O'Hara, M. (2011). Young children's ICT experiences in the home: Some parental perspectives. *Journal of Early Childhood Research, 9*(3), 220-231.

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Olofsson, A.D., Lindberg, J.O., Hauge, T-R., & Fransson, G. (2015). Uptake and use of digital technologies in primary and secondary schools – a thematic review of research. *Nordic Journal of Digital Literacy* [Special issue 2006–2016], 103-121.

Organisation for Economic Co-operation and Development (OECD). (2012). *Education today 2013: The OECD perspective.* Paris, France: OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2009). *New millennium learners in higher education: Evidence and policy implications.* Paris, France: OECD Publishing.

Penuel, W.R. (2006). Implementation and effects of one-to-one computing initiatives: A research synthesis. *Journal of Research on Technology in Education, 38*(3), 329-348.

Pereira, S. (2016). The Portuguese programme 'one laptop per child'and its impact on families: a study on parents' and children's perspectives. *Observatorio (OBS*), 10*(1), 107-124.

Richardson, J., Mcleod, S., Flora, K., Sauers, N., Kannan, S., & Sincar, M. (2013). Large-scale 1:1 computing initiatives: An open access database. *International Journal of Education and Development Using ICT, 9*, 4-18.

Rockman, S. (2007). It's my laptop. *Threshold, 4*(4), 21-25.

Schofield Clark, L., Demont-Heinrich, C., & Webber, S. (2005). Parents, ICTs, and children's prospects for success. Interviews along the digital "Access Rainbow". *Critical Studies in Media Communication*, *22*(5), 409-426.

Säljö, R. (2010). Digital tools and challenges to institutional traditions of learning: technologies, social memory and the performative nature of learning. *Journal of Computer Assisted Learning, 26*(1), 53-64.

Säljö, R. (2000). *Lärande i praktiken: Ett sociokulturellt perspektiv* [Learning in practice: A sociocultural perspective]. Stockholm, Sweden: Norstedts Akademiska.

Tallvid, M. (2015). *1: 1 i klassrummet: Analyser av en pedagogisk praktik i förändring* [1:1 in the classroom: Analyses of a pedagogical practice in change]. (Doctoral thesis, Center for Educational Science and Teacher Research and Research School in Educational Science, 42). Gothenburg, Sweden: Acta Universitatis Gothoburgensis.

Valiente, O. (2010). *1-1 in education: Current practice, international comparative research evidence and policy implications*. *OECD education working papers.* Paris, France: OECD Publishing.

Warschauer, M., Zheng, B., Niiya, M., Cotten, S., & Farkas, G. (2014). Balancing the one-to-one equation: Equity and access in three laptop programs. *Equity & Excellence in Education, 47*(1), 46-62.

Vekiri, I. (2010). Socioeconomic differences in elementary students' ICT beliefs and out-of-school experiences. *Computers & Education, 54*(4), 941-950.

Vrasidas, C. (2015). The rhetoric of reform and teachers' use of ICT. *British Journal of Educational Technology*, *46*(2), 370-380.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Yin, R. (2009). *Case study research: Design and methods* (4th ed). London, England: SAGE.

Zheng, B., Warschauer, M., Lin, C. H., & Chang, C. (2016). Learning in One-to-One Laptop Environments A Meta-Analysis and Research Synthesis. *Review of Educational Research, 2016*, 1-33..

Zhong, Z. J. (2011). From access to usage: The divide of self-reported digital skills among adolescents. *Computers & Education, 56*(3), 736-746.