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Abstract

Digital media is increasingly finding its way into the discussions of the classroom. Particularly interest is placed on mobile learning—the learning and teaching practices done with or via different mobile devices. Learning with the help of mobile devices is increasingly common and it is considered to be one of the 21st century skills children should adapt already in early stages in schools. The article presents both qualitative and quantitative study on mobile social video application, MoViE, as a part of teaching in biology and geography in 8th and 9th grades. The multidisciplinary data was processed to answer the following question: How did the use of mobile videos promote learning? The actual research question is however twofold: On one hand, it studies the use of mobile videos in mobile learning. On the other hand, it sets out to investigate the implementation of mobile video sharing as a part of the teaching and learning activities.

Keywords:

Mobile learning, mobile social media, MoViE video sharing application, SEA framework

Introduction

Digital literacy is at a centre stage in educational policy, curricular development, and everyday thinking about educational practice (Lankshear & Knobel, 2006, p. 7). There are countless collections of essays that discuss how new media forms shape human relations and generate new genres of art, while others discuss the new forms of literature. Although this literature includes discussions regarding terminological and aesthetic questions, it does not offer much information about the educational and pedagogical impact of digital literature and the institutional aspects of its incorporation into existing curricula (Simanowski, Schäfer, & Gendolla, 2009, p. 9). This study addresses these questions and introduces one aspect of mobile learning, the use and acceptance of social video sharing for learning.

Mobile literacy is evolving more and more into the scope of academic research on learning. Mobility enables sharing and receiving almost whenever and wherever, which provides lots of different opportunities for schools, and especially for students, to broaden fields of learning. Lankshear and Knobel (2006, p. 25) note that many of the new, changing social practices involve new, ever developing ways of producing, distributing, exchanging and receiving texts by electronic means, such as sound, text, images, video, animations and any combination of these. This is exactly what mobile video has to offer. One of the aims of the MoViE application in the field of mobile learning is to offer different ways of learning by doing (creating and remixing community created videos) and by experiencing (sharing experiences with others).

During the past decade rapid developments have occurred in the scope, uses, and convergence of mobile hand-held computing, communications, and information devices and services (Lankshear & Knobel, 2006, p. 181). Texting and photographing with mobile phones are common practices (notably among young people) across diverse social and economic groups in countries worldwide (Lankshear & Knobel, 2006, p. 182). This is one of the reasons why mobile learning is on solid ground, especially in Europe, since the European market for mobile phones has exceeded 100% penetration—increasing from 84% of the EU population in 2004 to 119% in 2009. The penetration rates in the US and Japan are around 80% (Commission of European Communities, 2009). The 119% penetration rate means that there are people who have more than just one mobile device with them. For example, a person can have one SIM card for her mobile phone and another SIM card for her 3G enabled mini laptop.

Most new mobile phones have a digital camera and video recorder. This provides a good starting point for a study on mobile learning which both exploits the mobile Internet, as well as the use of mobile phones as video cameras. In a literature review on learning with mobile technologies, Naismith, Lonsdale, Vavoula, and Sharples (2004) identified current trends in mobile computing as being a move toward devices that are more and more embedded in our everyday routines, ubiquitous and networked. This type of convergence can now be seen in increased use of mobile tools in learning. The portability of mobile devices and their ability to connect to the Internet almost anywhere makes them ideal for storing reference materials and learning experiences, as well as general-use tools for fieldwork. In the field they can be used to record observations via voice, text or multimedia and also can access reference sources in real time (Johnson, Smith, & Stone, 2010, p. 10). This study will provide concrete answers concerning the implementation of mobile social media in the classroom.

Background of the study

In this article the focus is on the use of social mobile videos in teaching and learning. This was a pilot study, the aim of which was to examine educational mobile video blogging in order to determine the research settings for the next phase and expectations for the future in more detail. In fact, it will report the results of a study in which a social video application, MoViE, was used to teach biology and geography to approximately ninety 8th and 9th grade students.

MoViE is a social mobile service that enables users to create video stories using their mobile phones. It is developed by Tampere University of Technology as a research platform for studying how people can create stories, share and learn with mobile social media service (Multisilta & Suominen, 2009). MoViE supports private groups, user-generated tags, tag spaces, geotags, remixing of clips, and moderation. The remixing of mobile videos is where it differs for example from YouTube or other public video services. MoViE was developed in the first place because there are not sufficient video sharing services available on the market for learning purposes. MoViE has been developed to address the creative and collaborative demands of learning and it enables several novel ways of utilizing videos for educational purposes (Kiili, Multisilta, Suominen, & Ketamo, 2009). The social and creative aspects of videos make learning more engaging and authentic.

Theoretically the design of the learning experiments in this study is based on the SEA research framework (Multisilta, 2008), Activity Theory (AT), and the Experiential

Learning Theory (ELT). These theories were selected because they explain learning as an active process, and they can be used to explain learning with mobile technology and social media. In particular these theories can explain mobile learning from a constructivist, situated, collaborative, and informal point of view. However, other combinations of theoretical frameworks may also be used successfully in describing mobile learning as can be seen, for example, in the studies of Naismith et al. (2004) and Rogers and Price (2009).

The actual testing was conducted in the fall of 2009 at Kasavuori School in Finland. The 8th graders' biology course dealt with the evolutionary theory of flora and fauna. The 9th graders' geography course dealt with cultural geography and locality. Kasavuori School provided an appropriate setting for the study because it is profiled as being one of the most advanced Finnish schools in the usage of new media (Kiili, Perttula, Suominen, Tuomi, & Lindstedt, 2010). The research seeks to introduce the views of both the teacher and students. After the pilot courses an Internet inquiry was executed. The data from the Internet inquiry and the mobile videos uploaded by the students were analysed with a qualitative content analysis framework. The research material consists of three different parts: 1) a teacher interview, 2) students' survey data and 3) the content of the uploaded mobile videos. The survey participants were 8th and 9th graders and approximately half of the students ($n = 50$) answered the survey. 23 were female and 27 male and their average age was 14.4 years.

The Internet inquiry contained approximately 40 questions related to MoViE and its usage, learning experiences and attitudes towards mobile learning. Most of the questions were multiple-choice questions (based on the *Likert scale*) and counterpart questions but the questionnaire also consisted of open questions. The most important themes and their numerical results have been gathered into tables in the results chapter. The open parts enabled respondents to speak freely on the topic and it gave them a chance to comment on certain questions they felt were confusing. The teacher was interviewed via e-mail and briefly in a face-to-face situation. The teacher's e-mail interview dealt with the same themes as the Internet inquiry. One of the most important aims of this data gathering was to receive data and information that would provide a coherent view on the matter.

The rest of the article is structured as follows: first, we go through the research methods used in this study and introduce the SEA, Shared Experience and Activity Framework. Second, we introduce MoViE and explain the design of the learning activities in this study using SEA. Third, we present the most significant results concerning the experiences and attitudes towards MoViE and mobile learning in this study. Fourth, we discuss the process itself and issues that rose up during the study. Finally, we conclude by summarizing the results, the most significant findings and the future opportunities in the field of mobile learning.

Theories and research frameworks

Mobile learning

According to Mwanza (2007), learning with mobile devices is still a new research area and more work is needed in order to understand the benefits and effects of using technology to support learning (Multisilta, 2008). From this point of view it is justifiable

to discuss the characteristics of learning with technology and to build theoretical concepts and frameworks for supporting the design and implementation of pedagogically meaningful applications for learning. Mobile learning itself can be understood as e-learning on a mobile device (Trifonova & Ronchetti, 2003). In mobile learning, learners can continually be on the move (Sharples, Taylor, & Vavoula, 2005). Learners are not just moving from one place to another, but they also move from one context to another and from one technology to another. Based on Sharples et al. (2005), some aspects of informal and formal learning are fundamentally mobile even without mobile learning technologies as such.

It is widely accepted that mobile learning should be learner, knowledge, assessment and community-centered (Sharples et al., 2005). These elements of effective learning suggest a close relationship to social media that is clearly user, knowledge and community-centred. Assessment in social media is represented by peer-review based commenting, voting and reputation systems. Mobile learning can also be described as being multimodal learning. Multimodal learning refers to a learning process, where a learner utilizes two or more different modalities, i.e. a means of communication during the process (Anastopoulou, Sharples, & Baber, 2003). It is claimed that multimodal learning environments can facilitate learning processes because learners are different and, by adapting to their styles, learning improves. However, in many multimodal learning environments the learner has the responsibility to choose the media and interaction that supports their own learning.

Learning applications that build on social media and video are clearly multimodal. Learners sharing their experiences with videos are using pictorial and audio modality at the very least. Based on Lerman (2008), social media applications support users in creating content, annotating content with tags, evaluating content, and creating social networks with other users sharing similar interests. In social media, users are seen as being both content consumers and producers. Heyer, Brereton and Viller (2008) define mobile social software as being a system that can be used with a wide range of mobile devices with the aim of supporting socializing, and taking advantage of social information or social networks.

Experiential learning theory (ELT)

Based on Dewey (1938) experience is characterized by two principles, which are continuity and interaction. Continuity is that each experience a person has will influence her future experiences. Interaction refers to the current situation and its influence on one's experience. Finally, the experience affects to the mind and continuum of experiences. In some cases this can be described as learning. However, Dewey (1938) points out that not all experiences support learning. Felt experience is one's interpretation of the experience (McCarthy & Wright, 2004), for example I can express my experience by telling about it, drawing, taking a photo etc. The use of technology as a means to share our experiences with our family, friends or communities is called a *shared felt experience*. According to McCarty and Wright (2004), interacting with technology involves us emotionally, intellectually, and physically. In the case of social media, the interaction with technology is related, for example, to sharing learning experiences with technology. In this case, the role of the technology is to mediate the experience to the learning community. Technology is mediating our learning experiences to others while being an experience in and of itself. Based on Kolb (1984, p. 41), the experiential learning theory defines learning as "the process whereby

knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience”.

Experiential Learning Theory presents the learning process as a circle (see Figure 1). The process can be divided into four stages: concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE). The learning process can start at any stage. In between the learning stages there are four learning styles. The learning style is represented by combining learning abilities from the circle with a specific learning style and it is based on both research and clinical observation of the patterns of Kolb's Learning Style Inventory scores (Kolb, Boyatzis, & Mainemelis, 2001). According to Coffield, Moseley, Hall and Ecclestone (2004), a diverging learning style emphasizes concrete experience and reflective observation. It is also imaginative and aware of meanings and values, it views concrete situations from many perspectives and adapts by observation rather than by action. A diverging style can also be described as being feeling-oriented. Assimilating a learning style emphasizes reflective observations and abstract conceptualization. Understanding a wide range of information and putting it into a concise, logical form is natural for people with this learning style (Kolb et al., 2001). A converging learning style is a combination of abstract conceptualization and active experimentation. Based on Kolb et al. (2001), people with a converging learning style are best at finding practical uses for ideas and theories. An accommodating learning style emphasizes active experimentation and concrete experience. In this style, hands-on experiences and acting based on feelings rather than on logical analysis, is dominant (Kolb et al., 2001).

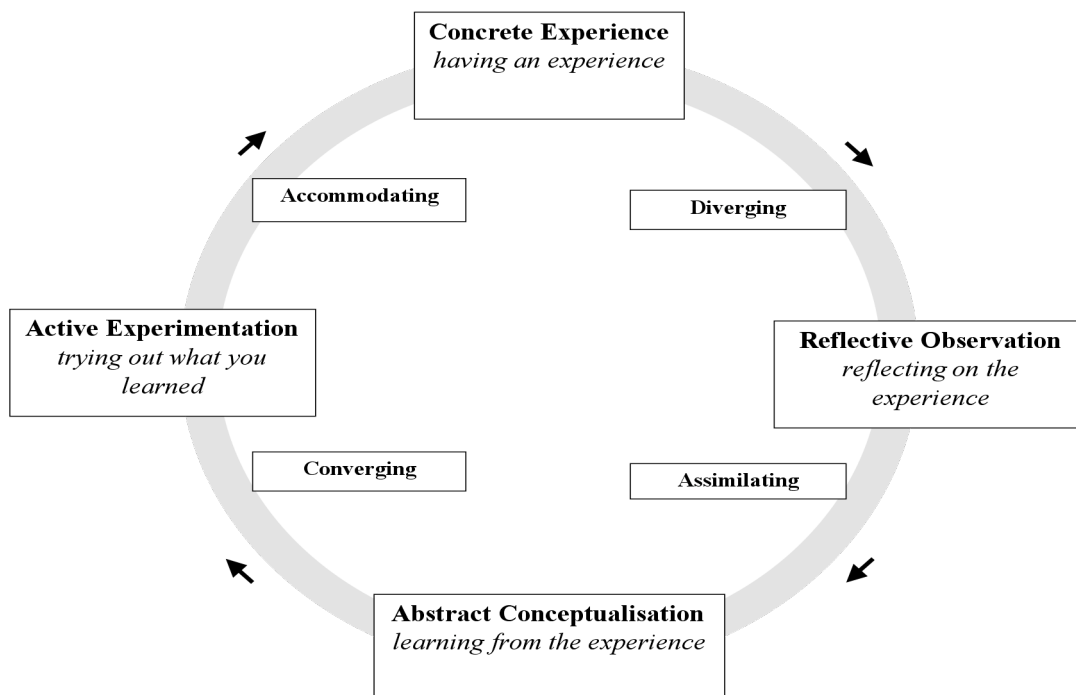


Figure 1: The Experiential Learning Theory (Kolb, 1984)

In the Experiential Learning Theory, learning: “is a process involving the resolution of dialectical conflicts between opposing modes of dealing with the world (ie action and reflection, concreteness and abstraction)” (Coffield et al., 2000, p. 63). The learning styles people adapt may change over time and may also depend on the learning situation. There are also a lot of criticisms of ELT, for example, Webb (1980) argues

that not all four stages are needed for learning to take place. However, for the purposes of this study, ELT characterizes learning in acceptable abstraction level.

Activity theory and SEA framework

Activity Theory is based on Vygotsky's cultural-historical psychology (Engeström, 1987; Engeström, Miettinen, & Punamäki, 1999; Kaptelinin & Nardi, 2006; Oliver & Pelletier, 2006) and it focuses on understanding human activity and work practices (Uden, 2007). There is a lot of research related to the Activity Theory in learning (for example, Engeström, 1987). Barthelmeß and Andersson (2002) discussed the role of the Activity Theory in software development and Fjeld et al. (2002) applied the Activity Theory to groupware design. The Activity Theory has also been applied to learning from digital games (Oliver & Pelletier, 2006), to interactive design (Kuutti, 1996; Kaptelinin & Nardi, 2006; Nardi, 1996), to mobile learning (Uden, 2007), and to designing constructivist learning environments (Jonassen & Rohrer-Murphy, 1999).

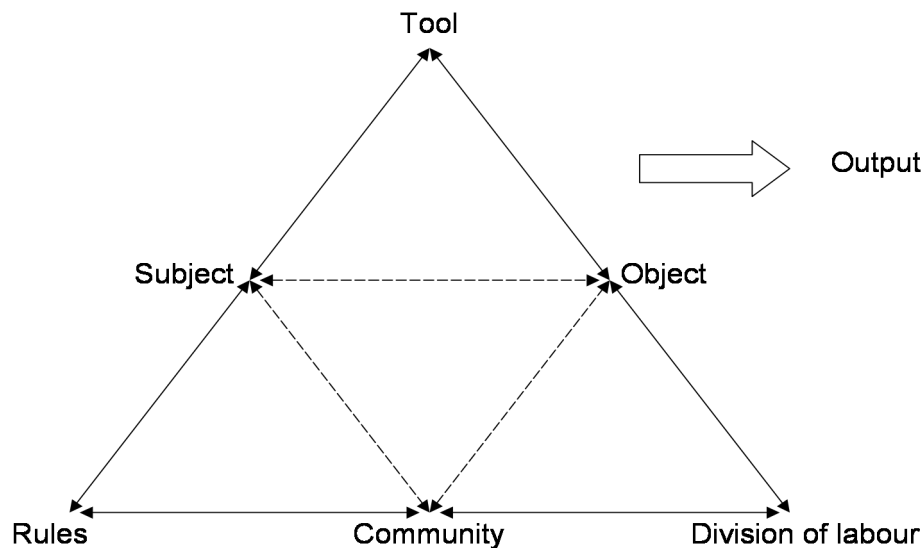


Figure 2. Engeström's view of the Activity Theory describing activity as a collective phenomenon (Engeström, 1987; Engeström *et al.*, 1999)

The central idea of the Activity Theory (AT) is that all human actions are called activities. An activity involves an object that is to be transferred to the output of the activity. In the AT, a subject performs an activity using a tool. The tool can be a physical tool or an abstract tool, such as computer software, and it mediates activity between the subject and the object. The interactions between subject, object and community can all be mediated (see Figure 2).

Engeström extended the original AT by adding community to the model. Rules mediate the activity between the community and a subject. The activity may be collaborative, i.e. several subjects jointly do the activity using tools and dividing the work between each subject. The object can be, for example, a problem to be solved. In general, tools, rules and division of work mediate the relationship between the subject, community and object. Tools, rules and division of work are artefacts that are used to achieve the outcome. Artefacts are not necessarily a fixed set of tools or things, but they can evolve over time (Engeström *et al.*, 1999; Kaptelinin & Nardi, 2006). Activities take place in a specific context that is characterized by a network of different parameters or elements

that influence one another (Engeström, 1987; Uden 2007). Activity can furthermore be divided into actions and an action on operations. In general, activities are based on high-level goals (for example, documenting a work process with images and video clips). Activities involve more practical goals, (using a mobile phone to record a video), and operations are routine or automatic (launching a video application, pressing a record button). In this case, rules would be described as being the procedure of doing the documentation.

The Shared Activities and Experiences (SEA) framework originates from a need to describe sharing and experiences in social media in theoretical terms (Multisilta, 2008). It is based on the Activity Theory, Mobile Web 2.0 Ecosystem (Jaokar, 2006), and the idea of considering the user experience or the shared felt experience as a central design rule. The SEA framework has been used in designing user experiences and user activities for mobile social media services (Multisilta, 2008; Kiili et al., 2009).

In the SEA framework, there are two modified AT model triangles representing two separate users (see Figure 3). This is to emphasize that users are going to share their learning experiences with other users. Each user may have different tools and objects in her activity system. A tool in our experiment is the mobile device the learner uses along with the MoViE system. Subjects share the community, rules and division of labour. In our experiment the community is the classroom and the teacher, who have access to MoViE. The rules include the both the technical guidance of the MoViE system and the information teacher has given for the learning activity.

In the Activity Theory, an important issue is the contradictions that can occur in the system. Solving the contradictions eventually leads to learning. In the SEA framework, the contradiction is replaced by a more general expression, namely the point of inspiration (or experience). The point of inspiration provides the subject with the initiation of an activity. In learning applications, experiences and contradictions are contradiction points of inspiration. A point of inspiration can also be a motivational factor—the learner is motivated to create a video and show it to other students. In addition, a point of inspiration may also be the possibility of remixing videos recorded by others.

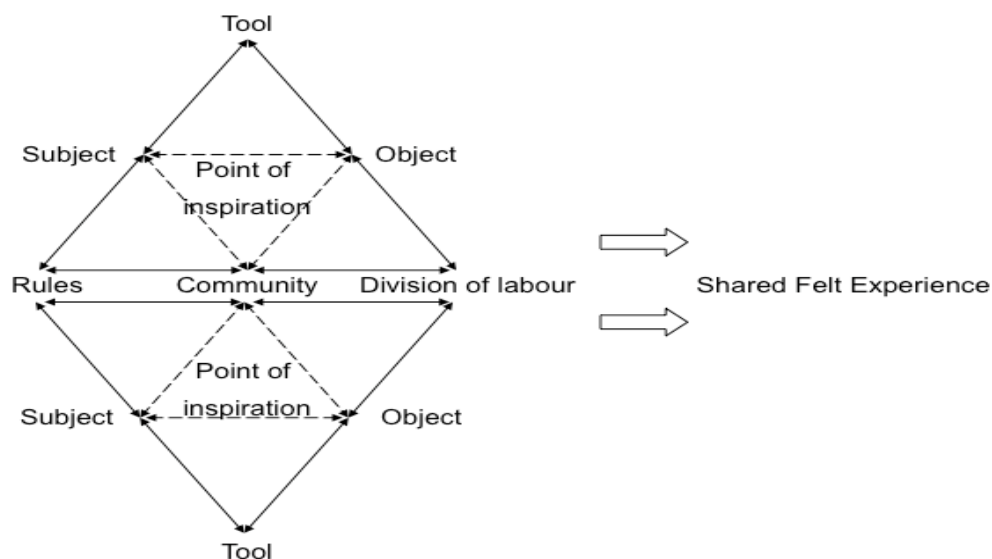


Figure 3: The Shared Experience and Activities (SEA) framework

MoViE as a shared experience and activity framework

The MoViE was designed as a mobile video blogging research instrument and provides a means of creating remixes of videos in the system (Multisilta & Mäenpää, 2008, p. 401). The appearance of MoViE (see Figure 4) is due to a desire to make it suitable for as many mobile phones as possible without the need of customization. The first screenshot shows the usual activities of a video-sharing site in MoViE. Users may upload videos, watch videos, rate videos and reply to a video with their own video. Something not that common is the possibility of users to make remixes from all of the videos in MoViE. Users can select the videos for remix by hand (left screenshot) or give search words for MoViE to select suitable videos (middle screenshot). Before finalizing the remix user may do some editing, like changing the start and end points of the video clips or changing the order of the clips (right screenshot).

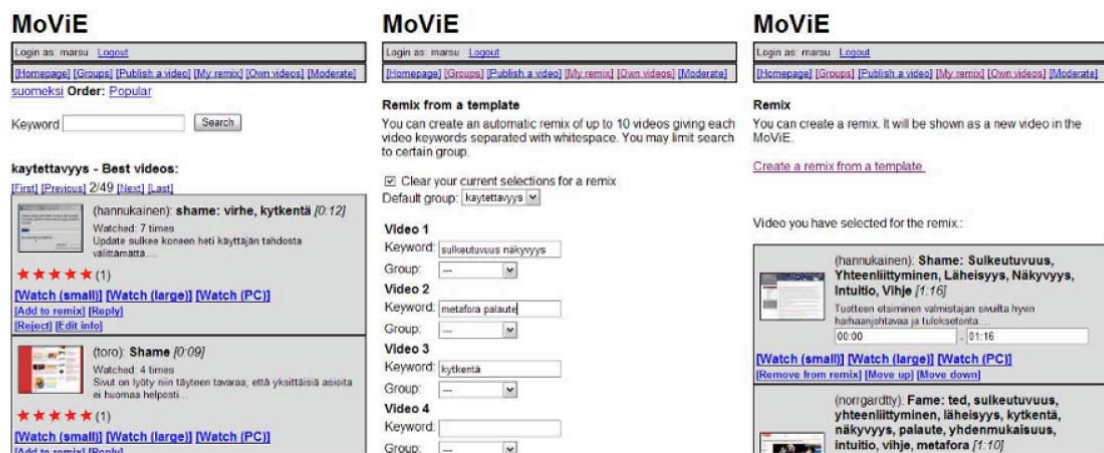


Figure 4: Three screenshots from MoViE

There were two separate learning activities in the Kauniainen school. First activity was related to the 8th grade biology course. The subject of the study in biology course was evolution and polymorphism of living organisms. The students made a short documentary on evolution, in groups of two or three. The students first got to know the subject with the help of ordinary textbooks and the Internet, then they planned a manuscript for the mobile videos. Final videos were watched together in classes and the students' made written evaluations. The video clips were evaluated (both on the working procedures and the content) and discussed with the students.

The second learning activity was related to 9th grade geography. The 9th graders took a course in cultural geography where they did a research on their place of residence, Kauniainen. The students worked in pairs. They designed and conducted their own research projects. Research themes included topics such as: services, educational possibilities, and traffic/public transportation in Kauniainen. Students were able to choose whether they wanted to take a video on the actual implementation of the research (especially the research done outside the school premises) or making a short video of the finished research. The videos were watched together as a part of the oral presentation done by the student groups and they were evaluated as a part of the whole course. The design of the first activity in terms of SEA and ELT is presented on the Table 1.

Table 1: A learning activity designed using SEA

Activity	Action	Operation	Point of inspiration	Experience
Study evolution and polymorphism of living organisms.	Read the materials available in your textbooks and Internet.	Read the chapter(s) form the textbook.	Need to get to know the theory for the video.	The action should create the idea of visualizing the topic. Concrete experience (CO).
		Read relevant web pages.		
	Create a storyboard and manuscript for the video.	Divide the work between group members	The experience from previous action.	Discussing the ideas, doing compromises, getting the plan ready. Reflective observation (RO) – Active Experimentation (AE).
		Draw/design the story		
	Record and tag the video.	Record a video clip based on the storyboard.	Shared goal. Help users to find your clip easily	Creativity. Abstract Conceptualization (AC) - Active Experimentation (AE).
		Select a tag.		
		Write a description.		
	Remix a story from clips in the service.	Select clips from service.	Create a video for others to see it.	Creativity. Abstract Conceptualization (AC) - Active Experimentation (AE).
		Press create remix.		
	Watch videos from the service.	Watch.	Reflect what others have done and what kind of experiences they have had.	Concrete Experience (CE) – Abstract Conceptualisation).
Comment, rate.				

Results: Experiences and Attitudes on the Mobile Video Application

Learning

One of the aims was to measure how MoViE promotes learning. The numerical results (found at the end of the each section) are presented more clearly in Table 2. From the students' point of view, 32% felt that one could learn by using MoViE. Students who felt this way usually added other positive aspects when describing the successful learning experience. This emphasizes that positive experiences and attitudes toward the learning method and/or application will more likely produce better learning results as well:

Its great to be able to work and learn with filming and mobile videos! (male, 15)

On the other hand, 34% seem to have differing opinions. Most of the open answers in this category included either negative comments on the functionality of the application or indicated boredom:

In my opinion, using MoViE is boring and I didn't learn a lot while using it. It should be drastically improved in terms of getting students to get excited about using it. (female, 16)

34% did not have a clear opinion. However, it has to be taken into account that the background and, for example, technical competence of the student naturally affects the learning experience itself and the results of this survey. It is also somewhat difficult to measure the learning itself, particularly by the students themselves. That may be one of the reasons why 34% of the respondents chose the option of not agreeing or disagreeing:

MoViE-application is okay for people that are interested in using it. I didn't feel that MoViE was so important to my studies, but it was ok (female, 15)

However the use of self-evaluation is gaining ground in the process of overall evaluation at school. Students are becoming more and more familiar with setting targets for learning in different courses and then evaluating themselves afterwards.

42% of the students did not find MoViE useful for learning purposes, but 20% felt otherwise:

I was able to do tasks as I wanted and was able to learn with a method (mobile videos) that I really liked. (male, 14)

I think the new dimensions (MoViE and mobile learning) broaden ways of thinking and it provides new experiences. (male, 14)

Due to the use of MoViE, the teacher observed that students became more active performers and participators in the classroom. According to her, more activating and participatory methods are, however, commonplace to her teaching in class. This is one of the reasons why MoViE and mobile videos suited her methods well. She strongly felt that writing is not necessarily the best way for all to learn and to show what has been learnt. When mobile videos were introduced to the groups, there were usually roles for everybody—one could be a writer, a director or an actor, for example. This provided a chance to learn something from all of these positions at the same time. It is also possible that mobile learning actually provides an opportunity for shy performers to act in a video. Because of this, mobile learning offers more possibilities of participating, learning and delivering for all types of learners.

When asked whether MoViE inspired students to learn and carry out the assigned tasks or not, over half (52%) of the respondents felt they were not particularly inspired:

Using MoViE was boring! It just didn't motivate me to learn. (female, 16)

One third (32%) of the students did not have a clear opinion and yet 16% felt that MoViE did indeed inspire them to learn and fulfil their tasks:

It was fun and inspiring to use MoViE since you learn new skills on the computer at the same time. (male, 14)

When measuring the learning experiences of MoViE users, we chose a self-evaluation based questionnaire concerning knowledge of the subject taught after participating in the MoViE course. What is promising is that over half (53%) of the students stated that they knew more now than before the course. This suggests that MoViE did not interrupt or deter learning. On the contrary, it seemed to support both teaching and learning. However, 30% still felt that they did not learn more during the course or with MoViE. When asked whether the students preferred studying and learning with MoViE over traditional ways of learning, a clear majority (60%) answered yes:

Everything in it is brilliant and fun! You learn really well by using it—I would like to work with MoViE again. It is fun to make (mobile) videos!! (male, 15)

It's nice to make videos and I, myself, learn best by doing! (male, 14)

It brought variety into learning and classroom. (female, 15)

Still, 40% feel that they preferred old, more traditional ways of learning. It must be noted that the traditional ways of learning were not defined by the survey so the answers rely on a student's definitions of traditional learning methods:

MoViE is a bit trifling and I didn't use it for anything else other than uploading my video on it. It's nice to work on the computer, but MoViE didn't affect or help my normal studying and learning hardly at all. (female, 15)

However, we must bear in mind that this was a pilot study with all of the technical problems and unpredictable issues that naturally affect the experiences and attitudes toward MoViE and mobile learning in general. Despite the pilot impact on results, it is interesting to note that, no matter how well schools are technically equipped, and how tech-savvy the students are thought to be, there are still individuals that seem to long after traditional ways of learning and the presence of the teacher rather than learning online:

*We want to learn with our teacher, like before! Not online, ***!!!!!!! (female, 14)*

I don't like the fact that the Internet is used this much at school. We can use it enough already at home. (female, 15)

However, it can also be asked whether the students, who felt the use of Internet negative, actually understood the nature of the task in whole or not? Since the idea of the tasks was to explore the subject and create (mobile video) content concerning it, which probably differs from the everyday use of Internet at home.

Table 2: The role of MoViE in learning experiences

Question/claim (1-to-5 rating scale)	Agree	No opinion	Disagree
1. One can learn through MoViE	32%	34%	34%
2. MoViE was useful, it helped learning	20%	38%	42%
3. Knew more after the MoViE based course(s)	53%	16%	30%
4. Would prefer mobile learning over traditional learning (yes/no based question)	60%	-	40%

Attitudes

One of the goals of this research was to examine the attitudes of students towards the MoViE video sharing application, and also attitudes and opinions on mobile learning in general. The numerical results more clearly in Table 3. This was done with questions that dealt with attitudes concerning mobile learning from three different viewpoints: learning, usage and prior and current experiences. At first, from the teacher's point of view, positive experiences of learning with MoViE were often based on the basic idea of making videos—the school's own 'YouTube' had this sort of impact. The attitudes toward making mobile videos were clearly affected by social media entertainment. The negative experiences dealt with the publication of videos and technical difficulties. A clear minority had experienced these types of negative feelings as compared to the whole group of the participants. 12% had experienced stress over MoViE during the course, while 32% really enjoyed courses executed with MoViE:

I liked it because the old ways of learning and learning methods are worn and dull. (male, 15)

The majority (52%) did not have any issues of trust related to MoViE application and only 12% did not really trust MoViE. It was not clarified what trust or not trusting meant in this question, but the open question data may give some examples why students might have felt that MoViE was unsafe. Probably one reason is technical errors and difficulties. If problems constantly occurred, trust in the application itself was impacted.

At first you weren't able to upload the video into the system, but then suddenly it just went there?! (female, 15)

I feel that using MoViE is troublesome and it affects the overall experience. It's hard to upload the video; it doesn't go there, and it immediately just says error. Then you have to work that out and then you can upload your video. (male, 15)

The other theme, mentioned earlier, that came up was publicity and the aspects revolving around it. This theme rose up, despite the fact that, in the beginning only 10% of the respondents felt that they were worried about publicity and/or misuse of their material on the Internet. The publication of one's appearance was problematic to some, despite the fact that it occurred in school, as a part of courses. It must be noted that the access to MoViE was not open to all, but only the students and teachers in the school:

Well, it was a bit unpleasant. (male, 15)

Yes, since everybody was able to see my video and me on it.. :((female, 15)

From time to time, I looked stupid on the video. (female, 16)

34% stated that making and sharing a mobile video is a good way of showing one's learning process and talent, while only 21% seemed to feel that the use and handling of video material did not show whether one had really learnt something or not. In addition, 34% preferred reporting their assignments and homework as text rather than with video and movies. However, 16% were certain that it was easier to express themselves and their results via movie clips than through traditional text. This supports the fact that mobile learning can be beneficial to some learners. However, this is not the only and the best way to learn for everyone, which is why multimodal learning is important since it takes into account other ways of learning as well. There are as many ways of learning, as there are learning individuals:

With MoViE, you don't have to write all the time! (male, 14)

I really like it because it's different! (male, 15)

Some students thought MoViE could be used in different school subjects, for example in domestic science:

Yes, MoViE could be utilized in domestic science classes and with their videos, students could show their expertise on the subject– like baking at home etc. (female, 15)

It could be used in languages. For example, one could make a video in English or use other languages in filming a short movie. (male, 14)

There were some students that felt quite the opposite. Naturally the students that did not like or benefit from the use of MoViE would not want to use it in other subjects either:

I can't come up with anything that you could use MoViE for? (female, 15)

I can't imagine that it could be used in other subjects and I wouldn't want that. (female, 16)

In order to evaluate the acceptance of MoViE among students, we also added a list of adjectives (6 adjectives from they could pick a maximum of three choices) that students chose from to describe MoViE. The majority (54%) thought that MoViE was easy to use. 27% felt that it was boring to use MoViE. 21% chose fun as the most descriptive word. 10% said that MoViE was troublesome, 6% thought it was challenging and only 6% described MoViE as being difficult. In addition, the two descriptive adjectives that the teacher chose were creative and participatory.

Table 3: Attitudes toward using videos and MoViE in learning

Counterpart claims	1	2	3	4	5	6	1-to-6 rating scale
1. Had stress over MoViE-courses	6%	6%	29%	27%	19%	13%	Looked forward to attending courses
2. Enjoyed the use of mobile videos in learning	15%	13%	38%	10%	13%	13%	Did not enjoy mobile videos in learning
3. Report homework as text	19%	15%	29%	21%	6%	10%	Report homework in video/movie
4. One can show learning progress via mobile videos	17%	17%	29%	17%	8%	13%	Mobile videos do not show learning

Usage

It is important to understand what the possible technical problem areas in MoViE were since they had an impact on adapting the technology with the teacher and the students. The numerical results more clearly in Table 4. In teacher’s opinion it was easy to introduce MoViE to the classroom. Uploading videos was fairly easy and quick after the initial technical problems were solved. According to the teacher’s knowledge, the students were extremely skilled with technology. Also the majority of the students (72%) felt that they were tech-savvy and technically well aware.

The teacher herself knew MoViE and its basics well. 62% of the students felt that they received enough guidance from the teacher during the course. 12% felt the opposite. Overall, it seems that MoViE was quite easy to learn, since the majority (56%) state that they learnt the use of MoViE quickly:

It was really good, because it was simple! Not too many things at once! 😊 (female, 14)

It was easy to learn using MoViE since it was designed so well. (male, 15)

However, 18% had different thoughts, mostly due to technical difficulties:

Use was troublesome, because the application didn’t work! (female, 15)

It’s soooooo boring! (male, 13)

It’s too difficult to organize the video clips in the right order. (male, 14)

Appearance of the application really divided opinions of the students. Some felt it looked ugly and boring; others found this to be one of the features that made MoViE simpler to use. The reason for the stripped-down appearance was the demand for making the MoViE site viewable to as many mobile phones as possible:

Hmm... I think it’s ok (but, maybe you could amend the appearance?) (male, 14)

It looks ugly; otherwise it's okay. (female, 14)

44% thought that it was easy to present the results with the MoViE application. 20% felt that MoViE is not the easiest application when presenting the results of one's work. After the course, 42% of the students felt that they were capable of using MoViE well. 26% felt the opposite. They felt uncertain of their ability to use MoViE:

I really don't know how to use it but it was fun to look other people's videos. (female, 15)

Table 4: User experience and actual use of MoViE

Question/claim (1-to-5 rating scale)	Agree	No opinion	Disagree
1. Teacher supported enough	62%	26%	12%
2. MoViE was easy and quick to learn	56%	26%	18%
3. It was easy to represent results via mobile videos	44%	36%	20%
5. Felt his/herself tech-savvy	72%	18%	10%

Sociability

The teacher stated that her position changed during the pilot courses. She explained that the role of a teacher became more of a guide or supporter in learning situations. The numerical results more clearly in Table 5. This also affected communication and interaction between the teacher and the students since they were both learning use of MoViE and were going through the different features in it. Because of this, the teacher felt that she got to know the students better and this improved the relationships between the teacher and the students. This is one of the positive outcomes of the study. It can be said that MoViE changes and improves the existing and more formal ways of communicating in classrooms and learning situations.

37% of the students experienced that the teacher was able to encourage and inspire them to use MoViE during the course. 24% felt the opposite and 39% did not have a clear opinion. This emphasizes the importance of the teacher involved in these new types of learning methods. The teacher needs to know what she is doing and has to be able to act as a guide in the new way of working and in the concrete application as well. 24% of the students said that friends and classmates had a positive impact on their MoViE usage. 32% seemed to differ, but overall 50% would actually like to do similar tasks in pairs and groups in the future. This is also significant because teamwork can be seen as being a characteristic feature of MoViE:

It was great to have fun with the class!! It was a blast! (female, 14)

It's much nicer to do stuff and tasks in a group in video rather than textually! (female, 15)

Students worked in groups or in pairs. 41% felt that they provided MoViE guidance to other students. Still only 10% acknowledged receiving this type of guidance from fellow students during the course. The students watched videos made by others and particularly during the course, not just at the end of it when it was more or less mandatory. 48% had watched fellow students' video material, but 21% said that they were not interested in videos taken by others. This indicates that MoViE did have an impact on mediated communication between the students. This was seen, for example, in rating the videos. The learning experience also expanded to outside the classroom. 21% of the students had shown their videos made at school with MoViE to their

parents, even though it was not obligatory. 58% did not share their video material at home. Nevertheless, it is promising that some of the students were willing to include their parents in their use of MoViE.

As stated before, there was also the other side of sociability in learning. Not everyone wanted to work within a group. 19% of the respondents considered themselves more the type of learner that prefers studying alone. However, the high percentage of students willing to do group tasks with MoViE emphasises that sociability is one of the key factors in the use of MoViE. This is based in the first place on communication between group members, secondly on communication between the different groups and thirdly, on mediated communication that was enabled via mobile devices and the Internet.

Table 5: Teacher’s and other students’ role in learning and using MoViE

Question/claim (1-to-5 rating scale)	Agree	No opinion	Disagree
1. Teacher inspired learning	37%	39%	24%
2. Other students had a positive affect on using MoViE	24%	43%	32%

Table 6: Sociability and collaboration

Counterpart claims	1	2	3	4	5	6	1-to-6 rating scale
3. Watched other groups videos	33%	15%	27%	4%	4%	17%	Were not interested in other’s videos
4. Showed the video material to parents	17%	4%	13%	8%	10%	48%	Did not show video footage at home
4. Would like to work in groups with MoViE in the future	31%	19%	15%	17%	15%	4%	Would rather study on themselves

Observations on the mobile video content

Dividing the 76 mobile videos into categories based on the themes, procedures and patterns processed the mobile video data, uploaded to the MoViE. They represent for example how students started to approach the tasks given by their teacher (see Table 6). In Experiential Learning Theory, the learning process can be divided to four stages: concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE). In-between the learning stages there are four learning styles: assimilating, diverging, converging and accommodating learning. (Kolb et al., 2001). All of these learning styles can be found through qualitative content analysis on the data created by the students.

Table 7: An analysis of the students' video data

	8th grade	9th grade	To sum up
Amount of videos	~50	~26	~76
THEMES: Biology & Geography The most common video types	a) Story built on PowerPoint-idea = narrative with still images + commentary, b) only 1 frame + commentary	a) Authority interviews, b) student interviews, c) story: different locations filmed with narration, d) reports on the study executed	Interviews, reports, stories, image + commentary
PROCEDURES: Ways/methods used for learning	a) Information seeking from textbooks and the Internet, afterwards analyse and script for videos b) organizing a story/narrative with suitable text and commentary	a) Making interviews and preparing suitable questions, b) organizing workable narrative with sound, voice-over and images. c) Reporting one's work with self-reflection	Exploitation of video format on average level
PATTERNS: Location of (mobile) learning	80% of filming took place inside the school building e.g. classroom. 20% took place outdoors.	75% of filming took place outdoors, outside the school premises, and 25% in the school building.	Approx. 50% of the students exploited the idea of mobility while executing their tasks

Half of the evolution course used video to create a story—from the beginning to the end for example in the history of plants evolution (see Figure 5). They searched information and filmed plants and animals on the Internet or from traditional textbooks. These pictures and photos were then gathered as a story. Students edited the video clips in MoViE, which enabled them to create a coherent story on the matter. This learning technique resembles of assimilating learning style that emphasizes reflective observations and abstract conceptualization. Other half had chosen to take a video of one image with the factual commentary on the subject. This could be seen as a diverging learning style that emphasizes concrete experience and reflective observation that views concrete situations from many perspectives and adapts by observation rather than by action.



Figure 5: Still shot from the 8th graders' mobile video on the evolution of flora

The cultural geography course consisted of videos taken at different locations for example when illustrating recreation facilities in Kauniainen (see Figure 6). Also these videos were based on creating a workable narrative whether they took videos of people (interviews) or locations.



Figure 6: The 9th graders filmed the sports field in Kauniainen

The 9th graders took more liberties with the locations because they were supposed to study the town of Kauniainen in which they live. A majority of the 9th graders took their videos outdoors and off the school premises. This emphasizes the benefits of the mobile, highlighting mobility in learning and teaching in practice. Overall the video material backs up the data gathered with the Internet survey and the teacher's e-mail interview. The video material provided promising results despite the fact that mobile videos could have been exploited more widely. The future research will include other tryouts of MoViE in teaching, in different schools and subjects. The teaching will be followed and similar data gathering will take place. In addition, it is highly considered that the actual teaching and learning practices will be observed in the future. In conclusion, it is promising that when the students were asked whether they would like to use MoViE again in the future or not, 67% of the students answered yes while 33% said no.

Discussion

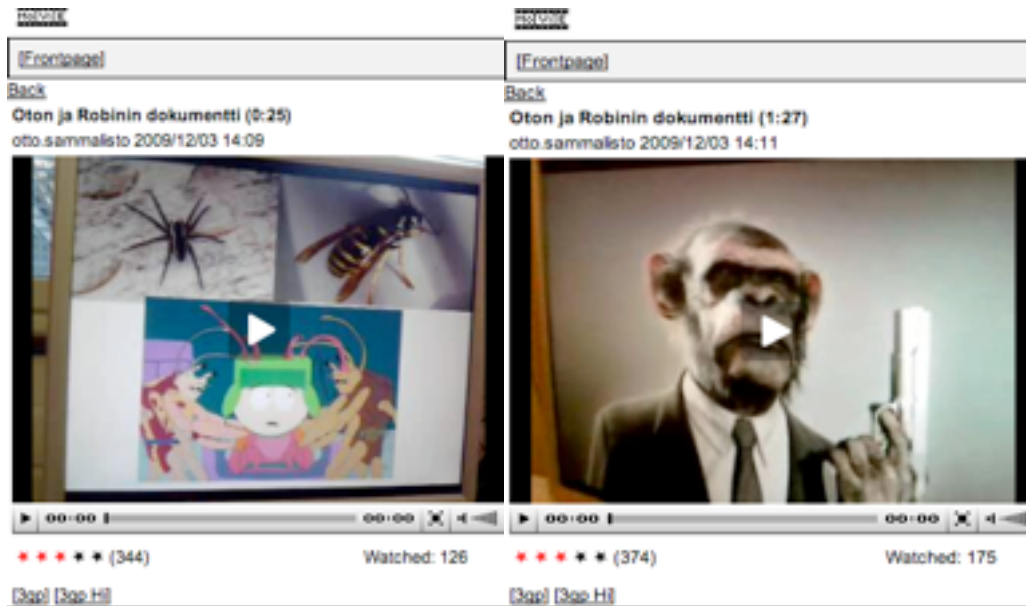
Considering the probable situation in the classrooms today, students in a course on digital literature may have to confront the fact that they often know more than the teacher. Digital literature blurs the boundary between the student and the teacher who is very often not much more advanced (if at all) compared to the students' knowledge about the technology. While the teacher may know more about the contextualization of digital literature within the history of literature and the arts, the students are likely to possess more media literacy regarding achieving, navigating, processing and manipulating data online (Simanowski, 2009). This has an enormous effect on the classroom situation. Teaching digital literature is not just an extension of teaching conventional literature using other means. It aims at making a student fit for a 21st

century multi-media society and it starts by making the teacher fit for encountering her students (Simanowski, 2009).

In this particular study the teacher of the pilot courses was probably more aware of technology and digital literature than the average teacher. This is partly due to the fact that Kasavuori, as a school, is profiled to be very advantaged in the use of media technology in learning. Balance is important in these new areas of learning and teaching. One issue is the balance of evaluation of the videos—what is good, what is accurate information and what the visual side of students' results are about. The teacher is often left on her own, to not only combine the different experiences of the work, but also to judge the various interpretations of these different experiences. This situation certainly requires didactic sophistication, including an ability to accept a wide range of answers and to leave questions open, even after a thorough discussion with the students (Goicoechea, 2009). The teacher also needs to be aware of sensing what the actual skills of the students are: who really needs assistance and who has enough knowledge to carry out the assigned tasks. This emphasizes the importance of balance in teaching new skills and content to students. The teacher also learnt a lot during the courses. However she did not feel that the students questioned her position and role as a teacher at any point. This would emphasize that, in this case, the teacher was fit to encounter her students.

Another thing that is crucial in today's classrooms that are technologically well equipped, is the need of teaching also the content produced and consumed. This is something that media education was first created for and it is tackling these issues constantly since the field of media is rapidly changing. This informal use of technology is part of today's learning and a school's task is to teach the appropriate use and creation of media contents. Working with digital literature constitutes an excellent way of teaching students to reflect on the use of digital language, media and culture (Simanowski, 2009). In contrast to regular websites that confirm our reading habits, literary and artistic digital works make us aware of the automatism and standardizations in digital media and allow us to question them. It is the idea of the consumer turning into a producer, which automatically changes the role of the student from a user of mass media products to being one of its producers. This was the case in this study as well since it offered students possibilities to produce their own video content and to learn from it. According to Wenz (2009), practical experience provides students with a better understanding of both the possibilities and the limitations of digital technology.

It is extremely difficult to combine the factual and fictive use of mobile videos. According to the teacher, the students seemed to have a clear vision of how a mobile video or published video on the Internet should look. This vision has evolved from certain video formats that are most commonplace on YouTube, for example. It needs to have entertainment value and it has to have certain features that are approved of by youth (see Figures 7 and 8). Otherwise it does not deserve to get published.



Figures 7 & 8: There was a lot of humour added to the video contents and there were familiar features of today's youth culture to be seen as well

The concept of a 'mobile video' that contains bad language, swearing and silly stunts was seen in the video making situations, as for example from *Jackass* or *Duudsoni Elämää/The Dudesons*. There was more swearing on the 9th graders' videos (probably because most of them were not filmed on the school premises), but both courses' material contained a lot of laughter and some bad language. According to the teacher, there were problems with appropriate behaviour on the video due to the idea of it being an informal video:

Not that difficult, although the teacher did criticize my video contents.. ;) (male, 15)

In the open questions students were asked to answer whether there were any problems in acting and appearing on a video made in school and during school hours;

I used F-words occasionally, of course. (male, 16)

It was pretty difficult and disturbing. (female, 14)

Well, no problems, but I did swear in the video a couple of times. ☺ (female, 15)

Conclusion: Defining 21st century mobile skills

Digital media literacy is continuing its rise in importance as a key skill in every discipline and profession. Opportunities abound for students today to learn the basic skills of digital technology. For many, this seems to happen outside the school environment, at home and with friends. As stated before, digital literacy must not be limited to the practical management of information, but should also include the semiotic processing of information (Simanowski, 2009). It becomes even more necessary to also teach formal content in media productions in the way that media education has already done during years past.

Lanham (1995) claims that literacy has extended its semantic reach from meaning the ability to read and write to now meaning the ability to understand information however it is presented. He emphasizes the multimediated nature of digital information and argues that to be digitally literate involves being skilled at deciphering complex images and sounds, as well as the syntactical subtleties of words. This is still accurate because the skill of multi-tasking is definitely one of the most significant skills of the 21st century (Lankshear & Knobel, 2006, p. 22). It is obvious that the new ways of learning have spread to several platforms and this is bound to affect the learning experience as well. The student must be able to multitask while surfing from platform to platform gathering the coherent learning experience. Mobility is one of the key factors in these different mediated communication situations and therefore, one of the most important skills of the 21st century's students should adapt, is the mobile multitasking in several (mobile) platforms and (learning) environments at the same time.

To summarize, MoViE did fit well for learning purposes since it offers features that are not available in public video sharing services (Juicer, Floobs, YouTube, LiveCasting) for example mobile remixing, automatic tagging and answering to a video with a video. The use of mobile videos and MoViE enhanced learning of one third of the students. The teacher organized a traditional exam to the 8th graders at the end of the course. According to the teacher and the results of the test, there was a clear correlation in the amount of work in mobile videos and success in the test. The students who had worked intensively with the videos succeed better in the written test. Of course the sample is narrow to make solid interpretations but however, this modest empirical support clearly states that learning with mobile video material can deepen the learning when done properly. It was also positive that the majority, over half the students, preferred mobile learning based on these pilot courses over more traditional ways of learning. However, there are still lots to do in the field of mobile learning in order to overcome technical difficulties and to make it more functional to different types of learners. According to our study, attitudes towards mobile learning were neutral. One third of the students felt that they enjoyed it and the other third felt differently. The majority was still uncertain of their feelings, which is understandable since mobile videos as a learning method was introduced to the students for the first time. The attitudes were also affected by the concrete experiences of usage of MoViE. Over half of the students thought that it was really easy to learn and use. However, there were slight problems for example when uploading the video, which according to the results caused frustration time to time. When it comes to sociability, half of the students would like to work in similar groups in the future and almost the third felt that fellow students had positive impact on their learning during the pilot courses. Also the social relations between teacher and students deepened since both of them worked together in order to use MoViE in the most beneficial way.

To conclude, it can be said that social media is a combination of people, technologies and practices that enable users to share their experiences with other users, and build shared meaning among communities. Mobility adds the freedom of time and place—it is possible to share experiences from where there is reasonable network access (Multisilta & Mäenpää, 2008). The today's learning should be built on what the young people already do and know (Lankshear & Knobel, 2006, p. 209). Based on this study, mobile social media is useful tool for school projects. The social and creative aspects of videos make learning more engaging and authentic (Kiili et al., 2009). The making of meaningful videos using social media services, i.e. telling the story with community created video should also be taught when mobile social video tools are integrated to

teaching and learning. We believe this is a part of 21st century skills needed in future society.

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