

# Learning Experiences on Mobile Social Media

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**Abstract:** This paper focuses on a pilot study in which a social video application, MoViE, was used to teach basic HCI concepts in bachelor -level education. The aim of the study was to examine the problem space of educational mobile video blogging in order to determine the next phase research settings and future expectations in more details. The learning activities in this experiment were analyzed using SEAF framework that was used to design the MoViE application. The results indicated that video blogging can be effective method in HCI education, but some of the students need support and more strict tagging rules to get best out of this kind instructional method. Furthermore, blogging turned out to be much more effective method to evaluate students' level of understanding than traditional paper-pencil tests. In the future, we will especially focus on the remixing feature of MoViE that makes possible for example to create personalized mobile video books, learning diaries and portfolios.

**Keywords:** Social media, mobile learning, activity theory, design, user experience

## Introduction

According to Rosson, Carrol and Rodi [1] HCI community relays on two main approaches in introducing HCI to undergraduates: 1) providing experience with meaningful design and evaluation projects, and 2) teaching with real world examples. Especially, case-based learning has turned out to be effective [2, 3]. However, we argue that the inadequate prior knowledge of basic HCI concepts may disturb the use of case-based methods. Thus, it is crucial to ensure that students understand the basic HCI concepts and that they have a common language about HCI before using case-based methods in teaching.

In our experience, it seems that students often thought that they have understood the concepts, but in reality they have formed only naïve models of these concepts. In terms of conceptual change this phenomenon refers to illusion of understanding [4]. In illusion of understanding the conflict with new information is passed unnoticed because of the over-confidence. Student may recognize some familiar elements in the new phenomenon, but his/her prior knowledge is not adequate to pay attention to the novel aspects of the phenomenon going beyond his/her current conceptions. The familiar elements of the phenomenon arouse illusion of understanding, which leads only to enrichment of naïve models or construction of synthetic models about the phenomenon. In worst case, the student who uses naïve models when reasoning real world HCI example may make wrong

conclusions and end up with misconceptions. Thus, in order to facilitate case-based learning it is very important to ensure that students have adequate prior knowledge to interpret the cases and to make appropriate conclusions.

In this paper we focus on the use of social mobile video in teaching HCI. In fact, we report a results of a pilot study in which a social video application, MoViE, was used to teach some basic HCI concepts to 12 students. The social and creative aspects of videos make learning more engaging and authentic. The MoViE has been developed to address the collaborative and creative demands of learning and it enables several novel ways to utilize videos in educational purposes.

First, we shortly describe the Shared Experience and Activity Framework (SEAF) that has been used to develop the MoViE application. After that the details of the study and the most important features of MoViE are presented. Finally, the results are discussed and conclusions about the use of mobile blogging in education are drawn.

## 1. Shared Experience and Activity Framework

In this chapter we describe a Shared Experience and Activity Framework that can be used to design the services for Mobile Social Media [5]. The framework is not a complete design model as such, but it complements other design methods available. We have used SEAF to develop the MoViE application. Later, in method chapter, we will also demonstrate how SEAF can be used to design instructional processes for Mobile Social Media.

SEAF is based on Activity Theory (AT) [6, 7] and Mobile Web 2.0 Ecosystem [8] and it has a strong emphasis on shared felt experience (Fig. 1). The central idea in Activity Theory is that all human actions are called activities. An activity involves an object that is to be transformed to the output of the activity. In AT, subject performs the activity using a tool. Engeström [7] extended the original AT by adding community as the third component to the model. The interactions between subject, object and community can all be mediated. 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. Tools, rules and division of work mediate the relationship between subject, community and object. Tools, rules and division of work are artifacts that are used to achieve the outcome. Artifacts are not necessarily a specific set of tools or things but they can evolve over time. [7, 9]

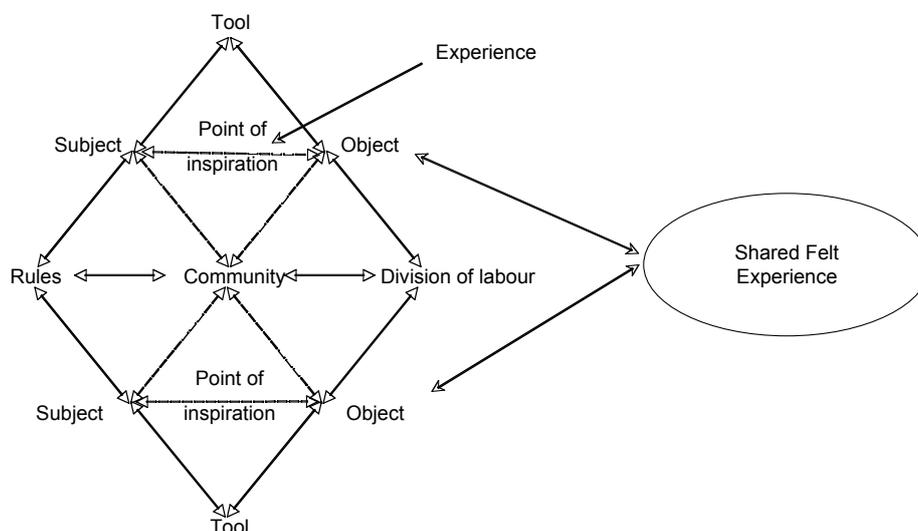


Figure 1. Shared Experience and Activity Framework

There are two modified AT model triangles representing two separate users in the SEAF framework. This is to emphasize that some of the components of the system are common and users have a possibility to share experiences with other users through the system. However, each user may have different tools and objects in his/her activity system.

In original Activity Theory, an important issue is that contradiction can occur between subject and object or between subject and rules. Subject can then try to solve the contradiction by using a tool. Eventually, this can lead to learning and felt experience. Point of inspiration provides the subject the initiation of an activity. Clearly, in learning applications, contradiction is a type of point of inspiration. Similarly, learning process can be seen as an experience. Thus, we claim that designers creating collaborative learning activities should focus also on supporting shared felt experiences.

According to Mwanza and Engeström [10] activity theory does not include a theory of learning per se. However, Engeström's [7] theory of expansive learning distinguishes activity theory-oriented pedagogical principles. Expansive learning theory states that new tools such as MoViE has a potential to work as a vehicle for transforming the learning activity as well as subjects engaged in the activity. In principle, learning is seen as complex cycles of learning actions in which new objects and motives are created and implemented, opening up wider possibilities for subjects involved in that activity. Further, the outcomes of learning can emerge as new practices and artifacts constructed by both students and teachers - for example, the final video blogs/video note collections that student create in this study.

From design point of view, it is important to consider activity in more details. Activity can be divided to actions and an action to operations. In general, activities are based on high-level goals (for example making lecture notes with video clips). Actions 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 could for example describe how to tag video notes so that they are easily accessible by other students.

In SEAF, user's point of inspiration can be a learning experience (documenting a learning process, subject A in Fig. 2), observing learning activities (subject B in Fig. 2) or an experience of remixing the content others have produced, as is the case for the subject C in Fig. 2. In Fig. 2 the subject A is doing a field work and is documenting her work with her mobile phone. Her colleagues and team members can be observing her work, and share the learning experience subject A has documented. Subject C could be creating a video report containing important information about the learning of the team by remixing videos from other team members.

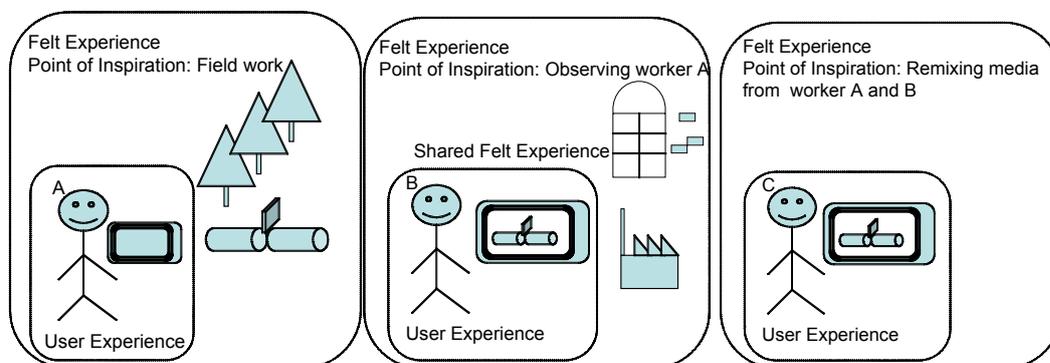


Fig. 2. Relation of Shared experience, Point of Inspiration and User Experience.

The SEAF framework characterizes a certain types of activity systems but not all kinds of activity systems. The user experience is considered to be a subset in SEAF. In general, user experience (UX) describes the overall experience that a user has when using a technology [11]. Based on Kuniavsky [12] designing user experience means a) creation of information architecture, b) designing interactions, and c) designing identity for the product.

Subjects are sharing the community, rules and division of labour. They are using the same system operating under same rules and they can divide their activities using available tools, for example by rating images and thus expressing the general opinion of the group.

## 2. Methods

This is a pilot study, which aim was to examine the problem space of educational mobile video blogging in order to determine the next phase research settings and future expectations in more details. The study has two phases: 1) Quantitative phase, which aims to development of the measuring instruments and analysis and 2) qualitative phase, which aims to development of the instructional process.

### 2.1 Participants

The sample (n=12) was collected in autumn 2008 in Satakunta University of Applied Sciences, Pori, Finland. Unfortunately, the recorded data was not complete with four students and therefore the number of analyzed participants was 8 of which half were males. The ages of analyzed participants were between 21 and 28.

### 2.2 MoViE Application

At first sight MoViE seems a YouTube -clone. However, it is especially designed for mobile video blogging research instrument and provides means to create remixes of videos in the system [13]. The raw appearance (Fig. 3) is due to making MoViE suitable for as many mobile phones as possible without the need of customization. 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 own video. Something not so usual is the possibility for users to make remixes from all of the videos in MoViE. User can select the videos for a 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 change the start and end points of the video clips or change the order of the clips (right screenshot).

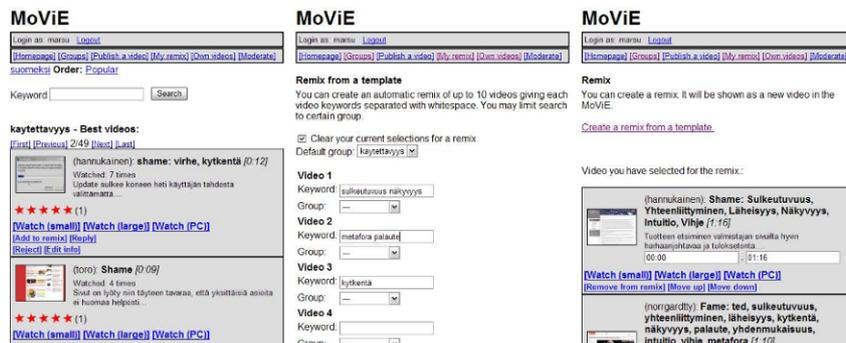


Figure 3. Three screenshots from MoViE

From analysis point of view, the video blogs and meta data can be easily mined and analyzed when all data is already integrated by the system. Furthermore, in terms of ecological validity [14] the virtual observation environments have several advantages over traditional observation.

### 2.3 Procedure

Procedure was following: 1) Participants listened to a one hour lecture about Gestalt psychology and another lecture about Norman's design principles. 2) The participants were pre-tested in terms of Gestalt psychology and Norman's design principles. 3) Participants constructed their video blogs autonomously during three weeks period. 4) The participants were post-tested with the same test that was used in the pre-test. 5) The participants were interviewed in two groups in terms of learning experiences. 6) Video blogs were analyzed.

### 2.4 Activity design with SEAF

Table 1 presents an example of simple activity design with SEAF in context of using MoViE in teaching HCI concepts. The activity design process starts by defining or recognizing the points of inspiration for the users. This is the motivation for the users to use the service. Next step is to describe the components of the activity system (subject, object, tools, community, rules, and division of labour) and activities needed for creation of an experience.

Table 1. An example of the activity design with SEAF in instructional context.

Activity	Action	Operation	Point of inspiration	Felt experience
Create video blog (notes) on HCI concepts	Select a concept to be shot.	Select a concept based on your knowledge.	Contradiction between the knowledge the learner has and the real life.	Contradiction, need to learn
		Find an example.		
	Shoot a video	Launch a recording application.		
		Press record button.		
Upload video to a social media service		Connect the phone to WLAN/3G	Share your video clips with a community	Disseminating learner's findings to the community.
		Open service from browser		
		Select clip from phone directory		
		Press upload		
Tag the video using defined tags		Select a tag	Help users to find your clip easily	Supporting other users.
Make a description of the video		Write a description	Explain your thinking, formulate your learning process.	Learning new knowledge.
Make note collections by remixing clips found in the service		Select clips from the service.		

In this study, the object was a creation of a video blog about defined HCI concepts. The determined rules defined what kind of videos students must shot, how the videos must be tagged and what kind of remixes must be created. Students used different kind of tools: Mobile phones, video screen capture software, MoViE application etc. Finally, the activities are divided to actions and operations. In conjunction to this, the designer should analyze and anticipate the experience the service is aiming to. The designer should consider the social and cultural meanings of the service as a potential source of an experience. Furthermore, ways to support learning as well as the meaning of co-creation and collaboration aspects should be emphasized. In fact, the designer should analyze the collaboration and knowledge construction aspects in every design step.

### *2.5 Measures and analysis*

Two researchers independently evaluated the tests in order to calculate the similarity between the evaluations. The correlation between points given by evaluators was relatively good ( $r=.722$ ,  $p<.001$ ) and it indicates that the test as well as evaluation criteria's were reliable. The effect of the test itself was not measured. The test might teach something itself, but it is also possible that frustration lowers the post-test scores maybe more than what the test itself teaches.

## **3. Results**

In general, we can say that mobile video blogging was found to be an effective learning method for most of the students. The average gain was approximately 20% and the greatest gain was nearly 60%. The worst (frustrated student) negative gain was approximately -15%. The interviews after post test was arranged for summarizing experiences after the experiment. The general experience in both groups was that finding, preparing and taking the video blog posts was evaluated the most challenging part of the process. Several participants told that they had to internalize the theoretical concepts (tags) before they could even search the possible actions to record. Furthermore, some students decide to change the activity during the records, because they discovered that they were recording incorrect conceptual action. Constructing video remixes was expected to be the point of reflection. However, this was not felt so challenging maybe because the recording itself required unexpected amount of reflection.

Because of the small number of participants and high number of variance, there is no explanative statistics in this paper. However, rank order correlation is used to approximate some causality between quantitative variables. It should be acknowledged, that because of small number of participants, all correlations are only estimates: they cannot be generalized and they are not statistically significant.

The pre-test score seems to predict the activity in uploading videos: What better a student managed in the pre-test that more s/he uploaded video clips into his/her blog ( $r=.797$ ). Furthermore, the amount of generated remixes predicted the performance in the post-test: What better a student managed in post-test that more s/he had generated remixes into his/her blog ( $r=.638$ ). The most interesting finding is that those who used wider tag vocabulary managed better in the post-test ( $r=.712$ ). We assume that this indicates that some of the students avoided shooting videos about concepts that they were not familiar with and thus their tag vocabulary remained quite narrow. There were also high correlation between use of wide vocabulary and a summarized number of tags ( $r=.963$ ), which is not surprising. As a consequence of this relation, also summarized number of tags correlated with post-test score ( $r=.630$ ).

The qualitative analysis of students' videos indicated that the textual post-test was not an adequate method to evaluate students understanding about the HCI concepts taught in this study. The analysis showed for example that some of the students still had misconceptions and they tended to mess up some concepts in spite of that they had performed quite well in the post-test. The textual answers of these students were written in such a way that evaluators assumed that students had understood the concepts, but videos told the different story. Overall, it seems that students with good metacognitive skills benefited from video blogging, because they could perceive the conflicts and were motivated enough to overcome them. However, all students could not benefit from blogging. It did not facilitate the conceptual change in some of the students who had strong illusions about their understanding or so poor prior knowledge that they could not perceive the conflicts. In fact, the illusions only got stronger. It is note worthy that some of the concepts taught in this study are such in nature that they seem familiar and are easily passed without deeper deliberation. For example, the gestalt's law of closure was such a concept – students were so confident about their interpretation of the concept that they did not grasp the existing conflicting notions and as a result their naïve models about closure got stronger. Furthermore, some of the weaker students tended to avoid blogging of unfamiliar content. Thus, they did not benefit much of the experiment.

#### **4. Conclusions**

In this paper we studied the usefulness of video blogging in introducing basic HCI principles to undergraduate students. In practice, a mobile social media application called MoViE was used for video blogging. MoViE has been designed with help of Shared Experience and Activity Framework (SEAF) presented in this paper. The results showed that SEAF can be a useful tool for designing mobile social media, but at least in learning context also other methods should be used concurrently.

The results indicated that video blogging can be effective method in HCI education, but some of the students need support and stricter tagging guidelines to get the best out of this kind instructional method. The social features that MoViE provides could be used more effectively to support conceptual change by revealing users' illusions of understandings. When designing the use of MoViE's social features, the presented shared experience and activity framework could be used more exhaustively. More detailed activities and actions should be used to achieve better results. In particularly, more emphasize should be laid on actions that trigger reflective thinking and reveals learners' misconceptions to his/her. Also the rules for activities should be more clearly defined and presented to users.

Interesting finding was that video blogging turned out to be much more effective method to evaluate students' level of understanding than traditional paper-pencil tests. However, more research on topic is needed in order to find out the true potential of video blogging in HCI education. In the future, we will especially focus on the remixing feature of MoViE that makes possible for example to create personalized mobile video books, learning diaries and portfolios. Also video blogging as an assessment tool will be studied.

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