

Students' use of social software in self-organized learning environments

Helle Mathiasen, Associate Professor, PhD, (hema@imv.au.dk) & Christian Dalsgaard, PhD Student, (cnd@imv.au.dk)

University of Aarhus
Institute of Information and Media Studies
Helsingforsgade 14
DK-8200 Århus N

Abstract

The paper will argue that new possibilities of digital media, especially social software, have a potential regarding development of self-organized learning environments and facilitating self-governed activities. Based on a sociological perspective, the paper will clarify the concepts of informal and formal learning used in this paper. It is argued that formal and informal conditions of learning can supplement each other within an educational setting. A formal setting of project work forms the basis of informal, self-governed activities of students. The paper will argue that social software tools can support students' self-governed activities and their development of self-organized learning environments.

Keywords

Communication, learning, social software, learning and communication environments, conditions and settings of learning and communication in educational systems, students use of digital media

1. Introduction

The aim of the paper is to discuss formal and informal conditions of learning in relation to self-organized learning and communication environments within an institutional setting. How and to what extent is it possible within an institutional setting to support self-organized learning environments by digital media?

The paper defines self-organized learning and communication environments as environments which facilitate activities initiated and organised by students without any formal influence from a teacher. The starting point of the paper's discussion of digital media in support of learning is an empirical study of two project groups who have chosen to use asynchronous computer conferences to support their work. Their learning and communication processes take place within a university setting, but the students' use of the conference system is not defined and structured by a teacher. This means that the

institutional purpose of the students' work is defined by the educational system, but the work processes are entirely self-determined and uninfluenced by teachers.

Based on an analysis of the communication of the project groups, the paper discusses the use of digital media, especially social software, in support of learning processes within an institutional setting, where students' self-organized learning and communication environments are in focus. The paper will argue that social software tools such as discussion forums, file sharing, weblogs, wikis and social bookmarking can support self-governed activities by empowering students' independent work.

The concepts of formal and informal learning are observed as self-governed activities within specific contexts. These self-governed activities have the possibility to stimulate each other and are, thus, regarded as a learning potential.

2. The sociological approach

2.1 What characterizes a social system and a psychic system?

Systems are *operationally closed*, *self-referential*, and *autonomous*. And social systems operate in, constitute, reproduce, and maintain themselves through communication. Thus, communication is the minor element in social systems, and this minor element is defined as the synthesis of three selections: the selection of information, the selection of utterance, and the selection of understanding (Luhmann, 1992).

All observation involves operations internal to the system; cf. the system characteristics. Thus, Luhmann calls his form of constructivism "operative constructivism" (Luhmann, 1988). The communicator or the utterer – or the "alter," as Luhmann prefers to call it – selects the information and utterance, and the addressee – the "ego" – selects the way in which the communication is understood.

We might as well call the utterer an observed system and the addressee an observing system, since the observing system selects understanding by projecting the difference between information and utterance on the system observed. These systems are called psychic systems by Luhmann, and these operate in, constitute, reproduce, and maintain themselves via conscious activities (thoughts, emotions, intuitions, etc.).

This means that we can only observe the first two selections in a communication unit; since systems are closed, thoughts do not leave psychic systems as thoughts. In other words, the incident, the *communicative action*, which is represented by the two first selections in the synthesis are what a system can observe. Last, communication requires consciousness – that is, a minimum of two psychic systems.

Social systems as well as psychic systems are based on meaning, implying that they choose to *actualize* something and leave other things alone. Based on the system characteristics mentioned above, the result is that in principle the individual system's *unique* selection decides what the system chooses to actualize.

2.2 What is learning and learning environments?

Learning is here focused on construction of individual mental constructions and reconstructions. The focus is not on learning related to social systems' possibility to learn, for instance the learning organization, etc. As regards communication and action these are the only possibilities that the teacher as well as the student has to take bearings of a person's selection of understanding (the 3rd selection which is not visible to the observer). In other words, you have to continue the communication in order to have the possibility to grasp the 3rd selection, the selection of understanding.

Since learning depends on selections made by the psychic system, learning cannot be organized or formalized. Learning develops from the selections of the psychic system. The question is how to develop a learning environment which supports and facilitates students' learning processes and knowledge constructions. We term such a learning environment a self-organized learning environment. A self-organized learning environment is an informal environment in the sense that students select their learning activities. If the point of departure is that these activities can be fruitful for knowledge constructions, the challenge is to empower students to organize their own learning activities. This understanding of learning has consequences for the understanding of the concepts of formal and informal learning.

2.3 What is teaching?

Teaching (communicative activities in a social system) and learning (cognitive activities in a psychic system) are two different modes that are attributed to different kinds of systems and they are considered mutually dependent. A related point is that understanding requires someone with whom to communicate when it is a matter of testing one's understandings. Knowledge is seen as a result of learning processes in which communication is in focus. The theoretical framework therefore contains a point: communication plays an important role when it comes to learning and the construction of knowledge.

2.4 The educational system

The educational system is a functionally differentiated system, with system related code, program (teaching plans etc.) and symbolically generalized media. The conditions for communication are related to these parameters. According to the theoretical framework, systems are unique, and the contingency will always be in force. "Education is action that is intentionalized and attributable to intentions [...] Thus, being communication, education cannot help but socialize, yet it does so with other effects than those intended". (Luhmann 1995, p. 244). The code reflects the fundamental difference of observation. The code can have two values that negate each other. For the political system the code is power/not-power, for the educational system it is good/bad (exams). The educational system has its own lens through which to observe the world.

2.5 What is formal and informal learning?

Different social systems constitute different conditions of learning. Thus, with the systems theoretical approach used in this paper the terms 'formal learning' and 'informal learning' cannot be used. Instead, we use the concepts of formal and informal *conditions* of learning. It is essential within which kind of social system learning may take place. The condition and the concrete context play an important role. It is, however, essential that learning will always take place through selections made by the individual psychic system. We will argue that a mix of formal and informal conditions can support learning activities and learning processes.¹

Formal learning is related to specific social systems, in this context named educational systems and the framework of educational institutions. It deals with concepts like purpose, aims and objective of the education, the classes and the teaching approaches. And it deals with the concrete social systems codes and symbolically generalized media of communication (Luhmann, 1995, p. 445). The intention in this kind of social system is to stimulate learning processes and knowledge construction.

Informal learning is also related to social systems. Informal learning is related to social systems where the participants select purpose, aims and objective and the conditions of the communication. That means that the educational system's code, program and symbolically generalized media will not necessarily be the current conditions. It means that the educational system's way of observing teaching, as an intentional communicative act, can be observed as excluded.

3. The empirical approach

Below, we present a study of two project groups who chose to use a conference system to support their project work. The students used an asynchronous discussion forum and file sharing. The study is based on an analysis of the communication within the conference system. Further, the study also includes interviews with two students.

The project work ran for four months. During the four months, group A produced 164 postings, whereas group B produced 224 postings. The students in both groups asked to have a discussion forum set up for them within the conference system, whereas other groups did not use a discussion forum. In other words, the communication in the conference system was neither initiated nor organized by the educational institution.

3.1 The educational setting

The didactical aim of the project work was to create a mix of formal and informal conditions of learning. This was done in an attempt to support students' independent selections. The formal conditions created an overall framework for the project work. First of all, students were required to make a problem description as the basis of their project

¹ Mathiasen, 2006: Formel og uformel læring – en systemteoretisk diskussion.

work. Further, students were required to submit an assignment and take a final exam. Finally, students were offered guidance from the teacher. Those were, basically, the formal conditions.

The project work itself, however, was not formalized. The informal conditions can be characterized as a self-organized learning environment in which students themselves governed the process. The activities of students were not controlled or formalized by the educational institution. Students decided how to approach their project; for instance, when it comes to searching for literature, selecting empirical methods and theoretical approaches, and choosing a product to design. It was up to the students to choose which kinds of communication forums they used during their project work. For instance, they could use written asynchronous net-mediated computer communication forums and/or oral synchronous face-to-face based communication forums. The institutional frame invited the students to make their own decisions concerning organization of the project work. However, teachers encouraged students to participate in discussions with the teachers, in the role of a guide, concerning issues related to their project. Further, students could choose to participate in seminars which discussed themes related to project work.

The intention was that students within the formal framework of the project work should develop their self-organized learning environment. Supporting self-governed activities means that it is necessary to provide opportunities for students to create a self-organized learning environment. On the basis of our study, we argue that digital media, in the form of social software, can support this.

3.2 Social software

‘Social software’ is a broad term which describes tools that support social relationships between people using the web. Social software tools include, but is not limited to, discussion forums, file sharing, chat, e-mail, weblogs, wikis, social bookmarking and RSS feeds. In relation to distance education, Anderson (2005a) defines educational social software as:

“[...] networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship.”

(Anderson 2005a, p. 4)

The conference system used by the students was FirstClass which primary functions are e-mail, asynchronous discussions, file sharing and chat. Other important social software tools include weblogs, RSS feeds, social bookmarking and wikis. We will argue that such tools can help support students’ self-organized learning environments.

A weblog is a web page which consists of a log of dated entries, listed in chronological order. The owner of a weblog continuously writes new entries and catalogues them under different headlines. In itself, a weblog is not social, but is rather individual and often personal. Readers of a weblog can write comments on each of the entries. However, a

weblog is primarily for individual presentations. Being individual means that a weblog can represent the individual on the web. This means that weblogs can form the basis of a person's socialization on the web. When a weblog is related to other weblogs, networks or communities are formed.

Further, it is possible to create individual networks by subscribing to different weblogs using RSS feeds (Downes, 2004). Using RSS feeds means that you get notified whenever there is a new entry in a weblog. Maintaining a weblog and subscribing to other weblogs creates the possibility of active participation on the web. Subscribing to and being subscribed to by other people means that communities are created on the web. People get access to resources and people that other people find interesting. The combined use of weblogs and RSS feeds supports and facilitates relations and communication between people.

This is further supported by social bookmarking tools. Creating social bookmarks means bookmarking web pages on the web instead of in your browser. Social bookmarks are social in the sense that they can be viewed by other people.

Finally, a wiki is a web page which can be edited directly from the web page by everyone who has access to the wiki. The wiki keeps a history of changes which means that it is possible to view previous versions of the wiki. A wiki, thus, supports collaborative development.

4. Findings

In this part of the paper we will concentrate on the two project groups' communication within the conference system, focusing on their use of digital media.

4.1 Types of communication organizations

The study showed that the students used the conference system for different purposes:

- discussions,
- preparation for face-to-face meetings,
- information exchange, and
- collaborating on writing the assignment.

Discussions were primarily short exchanges of questions and answers. The students in both groups prepared for their face-to-face meetings by exchanging texts often supplied with comments for discussion. Further, the students used the conference system to inform each other with ideas, notes, references, links to websites, etc. Finally, the conference system was used to collaborate on documents for the assignment. The students primarily used the conference system to send back and forth documents with comments for revision and discussion.

Both groups, especially group B, made many revisions on their documents. A study of the revisions, comments and discussions related to the development of the documents shows that the content has gone through several iterations (up to 40 revisions within a month). According to the sociological approach of this paper, communication is important to learning and construction of knowledge. From the point of view of this understanding of learning, the students' collaboration has initiated communication and thereby supported learning and construction of knowledge. The many iterations can be seen as selections made by the students.

The nature of the project work "forced" students to make their own selections. From the chosen sociological approach, the selection process is supported by communication. The many exchanges within the conference system made the students rethink and revise their selections. Thus, the conference system supported this process and can be seen as an enhancement of the face-to-face meetings of the students. According to the students, the written communication within the conference system formed a basis for the face-to-face discussions. The more reflective writings enhanced and enriched the developing discussions.

The conference system supported the students' self-organized learning environment. The students used the system in their own way without any guidance from the institution. However, the self-organized learning environment of the students was also limited. The study showed that the students needed tools better suited for collaboration, and more specifically for joint work on writing the assignment. Further, the communication within the groups was closed in the sense that it did not involve other people. In other words, the learning environment was, so to speak, limited to the conference system.

5. Discussion and conclusion

5.1 Social software and formal/informal conditions of learning – a potential

It is argued that other social software tools can help better support self-organized learning environments, and, thus, can supplement the use of asynchronous discussion forums and file sharing within a conference system. Social software can enable a richer use of the web and can provide opportunities for development of self-organized learning environments. Social software can support self-governed activities in which students, for instance, are engaged in informal discussions and networks. We will argue that different social software tools can facilitate students' development of and engagement in networks that are not organized by the educational system. Further, social software supports students' use of resources not provided by the educational system with the intention of reaching specific goals of the educational system. Social software can provide students with opportunities for communication and social relations which can empower them to develop self-organized learning environments.

In that respect, social software can be considered an informal supplement to the formal institutional setting (Dalsgaard, 2006). Use of social software is not determined by the

educational system, and the communication supported by social software does not take place within the institution. Anderson (2005b) suggests:

“Educational social software can be used effectively to create a type of overlay network to enhance the more formal institutional network consisting of student support, library, tuition, registration and other institutionalized services.”
(Anderson 2005b)

The world wide web provides a massive amount of resources. The potential in relation to education is big, but the complexity provides a huge barrier. Search engines like Google do an impressive job, but it is still difficult for an individual to navigate the resources on the web, and to value their relevance.

Social software can provide tools for a personal, individual and informal use of the web which is based on social networks and communication. Social software enables a personalization and individualization of the web (Dalsgaard, 2006). Weblogs can be used to develop relationships with people. Access to weblogs also means access to resources like links to web pages, papers, references, etc. Using social software represents an alternative way to navigate the web than using search engines. Engaging in networks through public discussion forums and weblogs will enable students to find resources through people in their network and will enable students to engage in informal discussions not controlled by the educational institution.

Weblogs can be used to form networks or communities which can initiate informal conditions for the discussions. Social bookmarking can enrich this network by providing students with a network of references from other people. These tools support development of social networks and can therefore facilitate communication and discussions. A wiki – or similar tools – can support the process of collaboration. At the same time, a wiki can be used to present the project for other people. Such tools can support students in their self-governed work; for instance collaboration on writing an assignment.

The result is what could be termed ‘informal networks’ – networks developed by students themselves. A similar, but more formalized approach, is suggested by Koper (2004a; 2004b; 2005) who uses the concept of ‘learning network’:

“Self-organised learning networks provide a base for the establishment of a form of education that goes beyond course and curriculum centric models, and envisions a learner-centred and learner controlled model of lifelong learning.”
(Koper 2004b, p. 1)

The use of social software suggested above takes this approach a step further. Informal networks are completely organized by the students without any influence from the educational institution.

5.2 What can the distinction formal/informal conditions contribute with?

The concepts of formal and informal learning are observed as self-governed activities within specific contexts. We argue that these self-governed activities have the potential to stimulate each other and thus are regarded as a learning potential. According to the systems theoretical approach, an educational institution cannot control a psychic system, because the system is closed, self-referential, and autonomous. In other words, all selections are system dependent.

Following that perspective, a learning process can, however, be initiated and framed by formal conditions, and, given the “right” conditions, can develop informal activities in students’ self-organized learning environment. The consequence is that learning processes are not controlled by the educational institution, and that learning and communication are not limited to the teaching and the use of resources provided by the educational institution.

The study of the two project groups suggests that a conference system offering asynchronous discussion forums and file sharing has the potential to support students’ self-organized learning environment. We have argued that other social software tools – including, weblogs, wikis, social bookmarking and RSS feeds – can further empower students to develop fruitful self-organized learning environments which support self-governed and informal activities. In other words, social software tools can provide informal conditions for students’ self-organized learning environments – thus bringing the informal into the formal educational setting.

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