Online Communities and the "un"-importance of e-Moderators

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ABSTRACT

Within educational settings the use of social software often requires a time-consuming e-moderation, e.g. to keep discussions on a thematic track. This paper introduces a new methodology which helps to reduce the workload of e-moderators. To develop this methodology we present a community-communication model defining our problem space. Based upon this model we broaden our understanding about which effects are triggered by which actions of e-moderators. This leads to a set of "effect-equivalent" interventions associated to specific actions of e-moderators. Such "effect-equivalent" interventions reduce the workload of e-moderators as they can be taken without help of an e-moderator but result in the same effects as an explicit action of an e-moderator.

Keywords

Blog, content, communication, discussion forum, e-moderator, knowledge sharing, knowledge transfer, social software, community, Web 2.0, Wiki.

INTRODUCTION

The term networked learning can be defined as learning in which communication and information technologies are used to promote connections among learners, learners and tutors, a learning community and the corresponding learning resources. Jones et al (Jones et al, 2002) state that human-human connectivity is in the foreground of the definition of networked learning: "*The role of the tutor remains critical in our conception of networked learning and we envisage future online environments that offer a judicious mixing of technological support and human teaching*". As to the online environments today often monolithic eLearning systems are used as enabling technology. We, however, believe that an even higher benefit and effect can be generated, if information technologies are used with which the students are familiar anyway and which the students also apply in the spare time and outside any formal teaching and learning environment. For obvious reasons social software qualifies for this purpose: The current Internet hype, the Web 2.0, is mainly coined by various and uncountable many "small" software tools enabling what is often referred to a "collective intelligence". The new paradigm of content participation (and within the next months also the application participation) together with the metaphor of the "Long Tail" and new technologies form the back bone of this new collective intelligence. And all this works because the tools of Web 2.0 are simple and easy to use, their development is user-driven and their usage is only based on democratic principles, that is users pick and use only those tools which they really need. But what is even more important is that the tools match with the deep wish of individuals to transfer and share their knowledge with others on the Internet.

This is the current development of the Web 2.0 but how does the situation in educational settings look like? The application of Web 2.0 tools is far from reality and even traditional eLearning systems are not a standard component of today's everyday life in educational settings. Still, several tools, such as newsgroups, discussion forums, in some more advanced settings even Blogs and Wikis, are about to become an integral part for accompanying measures in higher education.

Within this context, this paper focuses on learning communities (i.e. any forms of online communities), the corresponding learning resources and the role of e-moderators. We place a special emphasis on e-moderators since it is widely accepted that their tasks are time-consuming and thus expensive which in turn often limits their involvement in the guidance and moderation of online communities. Guidance and moderation of the communities includes e-moderation tasks such as keeping the discussion in an online community alive, keeping the discussion on a given thematic track, keeping the community members motivated or adapting the size of the community according the a given purpose of the community. In order to reduce the workload of e-moderators these actions should be replaced, reduced or substituted by interventions which trigger the same effects. This leads to the guiding research question of our work:

> *Which actions of e-moderators can be replaced, substituted or reduced by "effect-equivalent" interventions to generate the same effects in online communities?*

To answer this research question the paper is structured as follows: The next section defines important terms used throughout the paper. To better understand how communities work and to define the boundaries of our research, we introduce a community-communication model. Based upon this model we then describe the scope of actions of e-moderators and the relationship between actions and effects they trigger. The next section presents a set of effect-equivalent interventions which contribute to a reduction of the workload of e-moderators. The effect-equivalence is verified by two extensive case studies. Finally, the paper closes with a brief summary and an outlook on our future work.

DEFINITION OF TERMS

Within the context of communities, the term Web 2.0 popped up – the web which is for the people and not for the commerce (as it is the case with "Web 1.0"). To some, Web 2.0 refers to a perceived transition of the internet from a collection of websites to a full-fledged computing platform serving web applications to end users. To others, Web 2.0 is a social phenomenon and dues to an approach to create web content; direct, honest and open communication with respect to the market as a conversation; reliance on community and decentralization of authority; freedom to share and transfer remix and license knowledge.

The idea of communities in the context of knowledge management is not new: Positive and emotional associations as well as high expectations, especially regarding communication and innovation, have resulted in the foundation of communities as informal groups of shared interests in many organizations (Reinmann 2000). According to a general definition a **Community** is „*a group of people with a common characteristic or interest living together within a larger society*" (MERRIAM-WEBSTER, 2005).

Depending on the purpose of coming together, one can differentiate between communities of practice (Preece, 2000) or communities of interest: The basic definition of **Communities of Practice** was coined by Etienne Wenger (Wenger, 1998): "*In a nutshell, a community of practice is a group of people who share an interest in a domain of human endeavor and engage in a process of collective learning that creates bonds between them: a tribe, a garage band, a group of engineers working on similar problems.*" The three essential elements are the domain, the community and the practice. A **Community of Interest** is a group of people connected to each other by a need to solve common problems, develop skills and share common practices. A community of interest may contain smaller subsets of people sharing information within their respective communities of practice.

According to the way how communication takes place we distinguish further between face-to-face communities and online communities: In **Face-to-Face Communities** the members communicate in person in a common room of perception while in **Online Communities** the participants transfer and share knowledge technology-enhanced by using a **Community-Platform** also over long distances.

In higher education all forms of communities mentioned can be found, even though their penetration depends of the type of community. Students find together in lectures where they engage in a process of collective learning because they share a common interest. While the lecture itself still in the majority of cases is held face-to-face it is also possible and getting more and more common to integrate community-platforms for further exchange of documents, comments etc. Roughly, higher education comprises communities (e.g., consisting of a group of students, or of a lecturer and students etc.) in which knowledge is shared and transferred. This human communication, interaction and cooperation within communities can be supported by **social software**. In our notion social software enables people to interact, communicate and collaborate with each other using the Internet. This interaction can be uni-directional or bi-directional which leads us to the definition of knowledge transfer and sharing:

We define **Knowledge Transfer** as the uni-directional transfer of knowledge (i) from individual A to individual B, (ii) from individual A to a community {A, B, C,…}, (iii) from a community {A, B, C,…} to individual A and (iv) from a community {A, B, C,…} to a community {A, B, C,…}. Note, that an individual A can be the sender of a knowledge transfer and at the same time be a member of the receiving community. **Knowlege Sharing** is an extension of knowledge transfer in the sense that knowledge flows in either direction, from the sender to the receiver and vice versa.

Communication transfers knowledge from a sender to a receiver, it is always associated to specific members of a community. For example, this includes statements in a discussion form or Blog or the discussion about an entry in a Wiki (but not the entry itself).

Content represents explicit knowledge which is not associated to certain members of a community. For example, content exists in the form of documents, Internet sites, and entries in Wikis etc. which are accessible to all community members.

In order to integrate Web 2.0 social software in higher education we briefly introduce Blogs, Wiki and Discussion Forums:

Blog: The term "weblog" was first used by Jorn Barger in 1997 (Auburn, 1999; Blood, 2000) and is now used to describe personal websites that offer "*frequently updated observations, news, headlines, commentary, recommended links and/or diary entries, generally organized chronologically*" (Werbach, 2001). According to Barger a Blog is a "*Web page where a Web logger `logs´ all the other Web pages she finds interesting*" (Blood, 2004). In our notion Blogs consist of communication statements that can be supported with content, such as documents, links to further literature etc. but also with communication in form of cross-links to other related Blogs, Wikis etc. The application of weblogs in education (also EduBlogging) is in contrary to the U.S. not yet well established in Europe. In the U.S. there exists already an EduBlogger community consisting of lecturers and pedagogues from universities and schools, e.g. the Educational Blogger Network (edBlogNet), aiming the cooperation of lecturers and organisations to implement weblogs in education. Blogs are particularly suitable for project studies, to coordinate group works.

A **Wiki** is a web application that allows users to freely add and edit Web page content using any Web browser. Wikis are based on a Content Management System, support hyperlinks and have a simple text syntax for creating new pages and crosslinks between internal pages. The Wiki concept was created by the U.S. software-engineer Ward Cunningham in 1995 developing a classical WikiWikiWeb „Portland Pattern Repository" as content-repository for programmers. The best-known example for a Wiki is the free encyclopaedia Wikipedia. (http://en.Wikipedia.org). Talking about EduWikis the user is situated in a permanent active and passive flow of reading and writing. Using Wikis it becomes possible to crosslink information of all sort of different areas. Learners can work on problems multidisciplinary. Applications for Wikis in education are projectplanning, common creation of logs, discussions or e-Portfolios.

Discussion Forums are electronic forums for like-minded professionals or people to exchange ideas, post questions, offer answers, offer help on relevant subjects. Electronic forums also provide ways of archiving (or storing) and searching for previous exchanges.

An **e-moderator** controls and steers the behavior of an online community; the objectives are to contribute to an effective and productive generation of community results and to prevent the community acting in an extreme and unintended way. We talk about **actions** of an e-moderator to denote a certain kind of things they *do*, e.g. posting an initial statement to a discussion forum. An **intervention** denotes an act to influence a situation in some way, e.g. in a discussion forum an intervention could be to allow only postings with less than 5 lines of text. This limitation can influence significantly the discussion within the community.

COMMUNITY-COMMUNICATION-CONTENT MODEL (C²CM)

As mentioned in the first section, our primary objective is to identify interventions which can support e-moderators in their daily tasks. Since, unaccountably many potential interventions exist we need boundaries for our problem space. The purpose of the community-communication-content model (C²CM) defines these boundaries.

The C²CM covers all theoretically possible ways of knowledge transfer and sharing within and between communities. The C²CM is not only restricted to communication but also includes content which particularly in higher education is an important supplement to communication (e.g., when students discuss about a lecture based on slides or journal articles). Figure 1 depicts the C²CM:
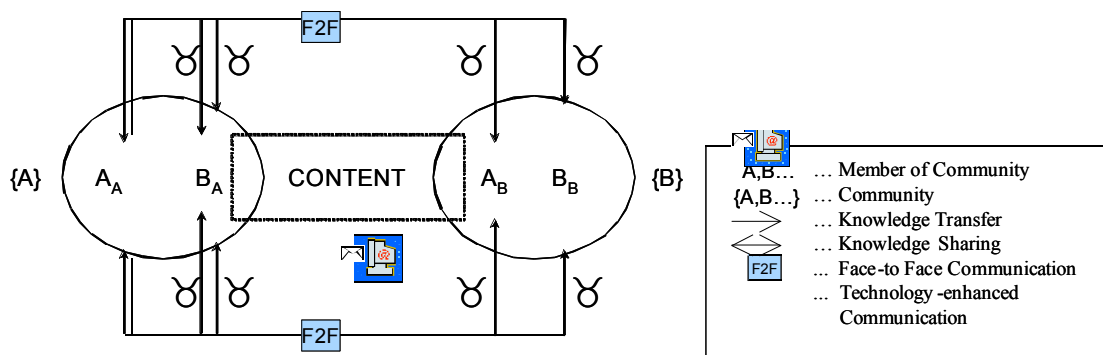

Figure 1. Community-Communication-Content Model (C²CM)

For the sake of simplicity we only address knowledge transfer and not knowledge sharing for the explanation of the C²CM. For further details the interested reader is referred to (Puntschart 2005).

The (theoretically) possible ways of knowledge transfer within communities comprise:

     1. $A_A \rightarrow B_A$ ~ transfer between two members in the same community
     2. $A_A \rightarrow \{A\}$ ~ transfer from one community member to the entire community
     3. $\{A\} \rightarrow A_A$ ~ transfer from the entire community to one community member
     4. $\{A\} \rightarrow \{A\}$ ~ transfer from the entire community to itself

The possibilities for knowledge transfer between different communities comprise:

     5. $A_A \rightarrow A_B, B_B,...$ ~ transfer from one community member to members of another community
     6. $A_A \rightarrow \{B\}$ ~ transfer from one community member to another community
     7. $\{A\} \rightarrow A_B, B_B,…$ ~ transfer from one community to members of another community
     8. $\{A\} \rightarrow \{B\}$ ~ transfer from one community to another community

Particularly, in higher education knowledge transfer and sharing also happens through what we refer to as artefacts, that is content which originally was created outside the community environment but which has a high relevance for the community. For example, in higher education students are provided with the slides used during the lecture but in addition also with scientific publications, conference proceedings etc. We therefore strongly believe that such content should play an integral role for all community environments in higher education settings. The integration of communication and content can take different forms. The most obvious and also – to our experience – most prominent form is to enrich community statements with explicit references (e.g. a URL) to such artefacts. This is independent of the location where the content resides (e.g. a background library within a discussion forum tool versus an electronic journal somewhere on the Internet).

SCOPE OF ACTIONS OF E-MODERATORS

Based upon the Design-Based Research paradigm (e.g. Brown, 1992; Bereiter, 2002; Fischer, 2003; Reinmann, 2005) we developed the C²CM which now helps to define the scope of actions which e-moderators perform. For each scope an exemplary set of actions as well as corresponding effects are defined later on in this section.

The idea of the scope of actions is to classify the actions of e-moderators according to a commonality they share. This results in a different scope (SA_1, SA_2, SA_3 ...) with different actions A_i associated with each scope. And each of the actions A_i within a scope of action may trigger one or several effects E_n. Note that it is possible, that different actions A_i and A_j from different scopes SA_1 and SA_2 trigger the same effect E_n. The left-hand side of Figure 2 illustrates this idea.
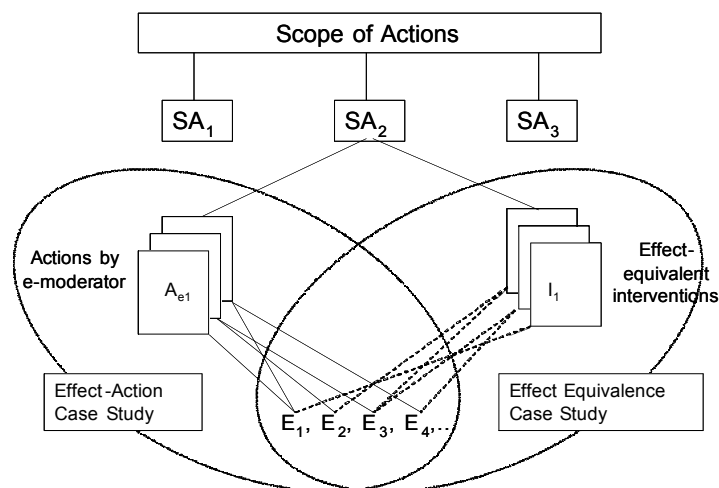

Figure 2: Scope of actions of e-moderators

The basis for the definition of scopes of actions of e-moderators is an analysis of typical roles of e-moderators. Several authors (e.g. Berge, 1992; 1994; 2005; Brochet, 1989; Feenberg, 1989; Morris, 1993; Paulsen, 1995) have attempted to list such roles or functions of e-moderators which include keeping members focused to topic, motivation of participants to communicate, complying with the netiquette, acquisition of new members,

exclusion of members, definition of community-aim, motivation of members to integrate content, provision and referencing literature and implementing new communication tools, etc. At the end of the analysis of actions other authors have identified for e-moderators, we differentiate between the following four scopes. Actions of e-moderators may concern the *community*, the *communication*, the *content* and the *integration of community and content*. In a next step we define hypothetical effects which might be triggered by the different actions. The result is the Action-Effect-Matrix displayed in Table 1. For example, it shows, that the Action "acquisition of new members" belongs to the scope "Community" and affects the number of community members (2nd row).

Scope of Actions	Effects	Actions of e-moderators (excerpt)
1. Community	Increase of number of members	Acquisition of new members, marketing
	Decrease of number of members	Exclusion of members
	Change of the composition of members	Introduction of new focus
2. Communication	Increase of number of new statements	Motivation to communicate/to participate in discussion
		Additional initial statement
		Introduction of new focus
	Improved match between statements and purpose of community	Advice to match the type of statements with purpose of community
	Improved quality of statements	Advice to improve quality of statements
		Keep members focused on topic
		Ensure compliance to netiquette
		Acquisition of new members, marketing
		Exclusion of members
		Close down of forum(s)
3. Content	Increased amount of content	Motivation of members to upload relevant content
		Upload of relevant content
	Increased quality of content	Provision of relevant content
4. Integration of Content and Communication	Increased use of content in communication	Advice to read content
		Advice to reference content
		Ask content-related questions
		Reference to content
	Improved of conformity of tools	Select appropriate tools (e.g., availability of content) according to the community's purpose and objective
	Improved of usability of tools	Select appropriate tools according to the community member's skills

Table 1. Action-Effect-Matrix

All effects in Table 1 were at an initial stage of our research just hypothetical assumptions which we, however verified, through case studies we conducted. These studies will be summarized next to the extent which is necessary to make this paper self-contained (a detailed description can be found in Puntschart 2005).

Action-Effect Case Study

To verify the relationship between effects and action shown in the Action-Effect-Matrix we conducted two consecutive case studies in two lectures at Graz University of Technology (Puntschart 2005). About 180 students participated in both case studies. For our lectures we provide a Knowledge Management System with an integrated IT environment including a personal working space for each student to store documents, links, etc. Within the system the students find all slides of the lecture, links and literature, and also research tools and references to scientific methods. In order to support knowledge transfer and sharing several discussion forums linked to the topics of the lecture are offered. These forums are designed according the C²CM to provide an exhaustive set of knowledge transfer and sharing activities. To make the results comparable with other social software tools a community Blog for collecting specific links classified into categories is used.
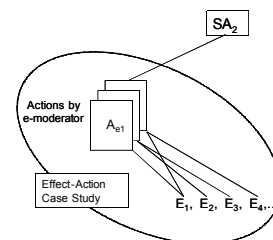
The discussion forums were moderated by four e-moderators which mainly performed actions according to the Action-Effect-Matrix. The results show that most of the assumed effects were triggered by the associated action. For example, within the scope *communication* the action of an e-moderator to post an additional initial statement

lead to the effect that the number of statements made by students that join this forum increases. To become more precisely: The posting of 13 additional initial statements in the different forums resulted in about 70% more postings from the community members (Puntschart 2006). Other actions such as "motivation to participate in the discussion" did not generate an immediate increase in the number of statements.

The main result of the action-effect case study was the assurance about the relationship between actions of e-moderators and their anticipated effects. The next question is how can we define interventions which generate the same effects as the e-moderator actions displayed in Table 1 but without support of an e-moderator? This question will be answered in the next section.

EFFECT-EQUIVALENT INTERVENTIONS

To disburden e-moderators new interventions must be identified which have the same impact as actions normally performed by the e-moderator. More precisely, we define the term "effect-equivalent" as follows: An intervention is "effect-equivalent" to an action of an e-moderator if its application results in the same effect. Note that we do not take the dimension time into account for this definition. Therefore it is possible to have an intervention which is effect-equivalent to an action of an e-moderator but which triggers the same effects at a different point in time.

With the C^2CM and the scopes of action in background we develop the following matrix of effect-equivalent interventions (Table 2). Note that due to space limitations this matrix is only an excerpt from the complete matrix (c.f. Puntschart 2006):

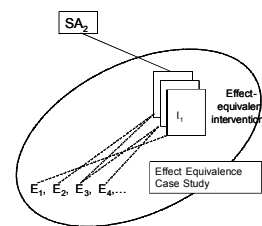| Actions of e-moderators	Effect-equivalent Interventions
Acquistion of new members, marketing	Make community (members, time) accessible to others
Exclusion of members	Apply automatic text analysis
	Use real identity for each community member
Introduction of new focus	Continuously include current trends of community topic in community statements
Motivation to communicate/to participate in discussion	Continuously include current trends of community topic in community statements
	Keep a well-balanced mix of statements and questions
Additional initial statement	Continuously include current trends of community topic in community statements
Advice to match the type of statements with purpose of community	Explicitly reference to content (URL, literature etc.)
Keep members focused on topic	Explicitly reference to content (URL, literature etc.)
Ensure compliance to netiquette	Automatic word-recognition and elimination
	Use real identity for each community member
Close down of forum(s)	Automatic word-recognition and automatic close down
Motivation of members to upload relevant content	Provide only advanced/basic literature or a mix of the two during the initial phase
	Provide no literature
	Explicitly reference to content (URL, literature etc.)
Upload of relevant content	Provide only advanced/basic literature or a mix of the two during the initial phase
	Provide no literature
	Explicitly reference to content (URL, literature etc.)
Provision of relevant content	Explicitly reference to content (URL, literature etc.) which is thematically closely related to community topic
Advice to reference content	Explicitly reference to content (URL, literature etc.)

Table 2. Effect-equivalent-Intervention-Matrix

To verify that the effect-equivalent interventions generate the same effects as actions performed by an e-moderator we conduct an effect equivalence case study. The main objective of this case study was to compare the effects of the effect-equivalent interventions (right column in Table 2) with the effects which we measured in the first case study where the actions were performed by the e-moderators.

Effect Equivalence Case Study

About 110 students were involved in this case study. They were provided with exactly the same technological environment as the students of the effect-action case study.

E-moderator actions have a clearly defined staring point, for example the time when a message is posted. In contrast to this, effect-equivalent interventions do not have this time dependency. They have more the character of a netiquette or a "codex of behaviour" which defines how a communication should be conducted by the community members. For example, instead of the explicit action of an e-moderator aiming to increase the motivation of community members to read a specific paper an intervention could be to allow only statements which explicitly (e.g. by URL) refer to papers in a background library. This case study yielded the following results: The way how community members discussed with each other changed. During the action-effect case study the community members were very much focussed on the e-moderator. For example, once the e-moderator had posted a message, the community activity increased first and then decreased again until the next message appeared. With the new interventions and also with the knowledge of the community members that an e-moderator would barely help them, the discussions had more the character of a continuum. In our specific case the involvement of the e-moderator dropped by about 50% (in terms of number of statements made) without risking that the discussions do not stay on the thematic track and delve into tangential areas.

A further result was a complete and verified list (of which Table 2 shows an excerpt) of effect-equivalent interventions which helps to support and even replace e-moderators (Puntschart 2006).

CONCLUSION AND OUTLOOK

Our work shows that e-moderators can be released, if one applies effect-equivalent interventions. However, we believe that it will be difficult to do completely without e-moderators and they will never become "un-important" for online-communities. But our intervention approach helps e-moderators to set up online community environments in which fewer actions from their side are required. This in turn opens new room for them to do the really important tasks, such as taking care of community members on a more personal level.

In the near future we will address the following research questions: We still do not understand the phenomenon why two different communities which address exactly the same topic within the same technical environment and with exactly the same support of e-moderators may have so different communication behaviours. Also, we want to further supplement our effect-equivalent intervention matrix by more guidelines which concretely help e-moderators to set up online community environments. For example, possible guidelines suggest allowing not more than 20 students for each discussion forum or not more than 15 students for a Blog if the Blog is used for the documentation of a project-seminar. All these activities should contribute to our vision to develop environments in which e-moderators can neglect "un-important" tasks and concentrate on the most important aspects of an online community.

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