Chapter 5

Reputation in Peer-Based Learning Environments

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ABSTRACT

This chapter proposes a reputation model to support peer-based learning in online communities. Based on literature on quality, trust, and learning, we argue that a reputation system for peer-based learning environments must at least address quality, context, and sustainability issues. We analyzed a number of successful online reputation systems with these issues, and developed a reputation model to support knowledge management, quality assurance, and increase user engagement in peer-based online learning communities. The description of the model includes a conceptual and mathematical representation, a process description to support implementation, and an evaluation framework. A simple example shows how the model can be applied.

INTRODUCTION

The Internet is a platform that offers new possibilities to learn and build knowledge with others. The decentralized aspect of the network allows anyone with an Internet connection to participate in this process, but this poses challenges to the way we judge about information, provide learning support, and evaluate learning results. Online learning requires new mechanisms through which support, guidance and evaluation can take place to optimize learning effects for participants involved. Considering learning environments that provide access to all, new socio-technical systems are needed in order to bring these new learning environments to maturity. A critical issue in getting there is how to create sustainable learning processes where participants can rely on each other and
available content. Trust is an underlying concept for individuals to learn from and with each other in an online community. Implementing systems fostering trust through reputation can enhance the learning effectiveness, and provide alternatives for the traditional pedagogical approaches still in place in current e-learning courses. Formal education could profit from such new learning environments adopting these pedagogical approaches and related technical systems.

Forums, online communities, and professional networks are these new learning environments, where people find and share information, collaborate and learn on demand. A significant challenge is to motivate people to participate in the knowledge-sharing and learning process. Especially in peer-based learning environments, where learning depends on the effort of all participants, it is essential to provide enough incentives to participate and share information with others. This chapter will focus on how data analysis and reputation technologies can improve engagement and learning in online communities.

In this chapter, we describe the need for an online reputation system for peer-based learning environments, present a model with design requirements, and propose an evaluation framework to evaluate a prototype in a community.

**Organization of the Chapter**

The background section is divided into two parts. First, it elaborates on changes in the learning landscape, with a focus on self-organized and peer-based learning systems. In this context we focus on the relevance of reputation to increase trust in people and content in online learning communities. We then examine a number of successful online reputation systems in order to elicit design requirements for a reputation model to support peer-based learning in online communities. The model can be used to develop reputation systems in peer-based learning environments. In addition, we propose a method to implement and develop of the reputation model in an organizational context, and an evaluation framework to evaluate and improve the reputation system. The concluding section focuses on relevant research directions and relevant domains in the context of the proposed model.

**BACKGROUND**

In 2008, George Siemens and Stephen Downes organized an online course on Connectivism and Connective Knowledge (CCK08). Over 2200 persons worldwide actively participated in an online, peer-based learning network. Because the organizers were unable to assess and give individual feedback to each of the students, called the teacher-bandwidth problem, they motivated students to give peer-feedback, using technologies of all kind: virtual worlds, blogging, commenting, RSS feed-readers, Moodle CMS, and much more (Downes, 2008). The course was a so-called Massive Open Online Course, given for free, as part of a research project by the two organizers (Mackness, Mak, & Williams, 2010).

Open education has grown from sharing repositories containing courseware, to a variety of online initiatives, including full-fledged online e-learning courses, open source learning environments, and self-organized online courses. All these initiatives have the objective of providing better access to learning through the provision of free learning resources on the Internet (Brown & Adler, 2008).

The kinds of open, online courses given by Siemens and Downes rely in part on peer-guidance support. Connectivist and networked learning approaches focus on the ability of the network as a whole to learn, and to learn from the network using a variety of technologies. Connectivism describes a form of knowledge and a pedagogy based on the idea that knowledge is distributed across a network.
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