SocialIX:
Reputation Based Support to Social Collaborative Learning Through Exercise Sharing and Project Teamwork

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ABSTRACT

In this paper, the authors describe design and motivational issues of the web-based system SocialIX. It supports social-collaborative and cooperative aspects of e-learning such as sharing and reuse of (solutions to) single exercises, and development of projects by group-work and social exchange. Such aspects are supported in the framework of a reputation system, in which learners participate. A learner’s reputation is computed, presented, and maintained during her/his interactions with the system. The algorithm to compute reputation can be configured by the teacher from tuning weights associated to various aspects of the interactions. To enhance collaboration on exercises, the authors support contextual (to the exercise) micro-forum and FAQs with a currency-based concretization of the perceived usefulness of questions/answers. Group responsibilities, peer-assessment, and self-evaluation are supported by group-based projects with self/peer-evaluated phases, i.e., different stages of a project are assigned to different groups and a stage-deliverable is both self-evaluated (at submission) and peer-evaluated (by the group receiving it for the next stage).

Keywords: E-Learning, Group-Work, Reputation, Reputation System, Social-Collaborative Learning

INTRODUCTION

Web-based cooperative and collaborative learning can improve e-teaching and e-learning considerably. Traditionally the terms Cooperative and Collaborative bear different meaning; the former appears to be more related to interactions in a well-structured framework, mainly with the aim of producing a deliverable, possibly through plain and planned division of the work activity; the latter is preferably related to more loosely structured interactions, in which possibly clear roles and responsibilities are not directly preorganized (Panitz, 1997; Slavin, 1990). Yet commonalities among the mentioned concepts are extensive: for instance, the learner and the teacher are involved in active and sharing experiences; the teacher is in a role of facilitator, the learners co-works in group activities. For a more comprehensive set of commonalities, cf., Kirschner (2001) and Kreijns et al. (2003). We think that, in the web-application we are going to present, those concepts are implied

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distinctly in some modules and concurrently in some others; so in the following we shall not make distinctions, and use only the term collaborative.

In this paper we describe the design and the present implementation of a system, SocialX, supporting e-learning in a reputation-based social network environment; in such framework, learners participate by interaction, exchange of information, and collaboration over common problems (e.g., mandatory exercises in a subject matter and/or group projects).

In SocialX we try and integrate the social dimension of e-learning (Cheng & Ku, 2009; Kirschner, 2001; Weller, 2007), with the more experienced group dimension (Panitz, 1997; Slavin, 1990). In particular we support the “social dimension” through management of reputation. So, in the next two subsections, we discuss collaborative e-learning and reputation in social-based e-learning, trying to point out the contribution that we hope SocialX can bring into the picture.

**Collaborative Learning**

Collaborative learning is considered a strong methodology to allow the development of critical thinking in learners, and the acquisition of new knowledge. Moreover it is seen as a way to support the retention of knowledge and its deepening in time (Kreijns et al., 2003). In a collaborative environment, learners can be supported in sharing training experience, combining their skills, and eventually preparing for team-based working activity (Cheng & Ku, 2009). Whereas collaborative learning is usually discussed and applied on small groups, a further aspect of interest is, then, in the vision of e-learning in a social dimension, as a community in which social activities take place and social interaction skills are developed by the participants (Wenger, 1998).

Moreover, the methodologies and technologies, developed to support collaboration environments, are starting to produce effects on the design, and extension, of present e-learning standards (Yu & Chen, 2007), namely in the IMS Learning Design (IMS Learning Design, 2009). In this respect we may note that, as well as the internet has been growing around the key technological factors of openness, robustness and decentralization, e-learning is likely to develop around the same factors (Weller, 2007).

Regarding the model of group-work applied in SocialX, it is intended as to allow that the relational and technical improvements, gained by the participants through usual group-work, can be augmented through social exchange (namely, in the development of a project work, intermediate products are exchanged and peer-evaluated through groups).

**Reputation Systems and E-Learning**

A reputation system captures (and makes evident to the learner) the contributions the learner is giving to the group, to the class and to the course. A reputation system is both a motivational tool and a way to evaluate and understand learner’s psychological preferences, relations with others, and ability to analyze/judge others’ work (thus conceptual competences).

Being, conceivably, applicable to “the measuring and representing of persons”, the concept of reputation shows both appealing and worrisome aspects (Doctorow, 2003). As a matter of fact, it is present in several areas of social web applications, and it is also used with educational purposes. With respect to e-learning, reputation based techniques are used to increase the relevance of the learning material that each individual student is exposed to, and provide quicker system reaction and feedback.

Wei et al. (2007) try and catch credibility ranks of participating users in an e-learning system called Learning Village. Basically, citation relations among contributions (articles) are managed. Analysis of such relations can unveil dependency relations among authors (and the related credibility). Simulated experiments confirm that “top users” are mostly classified in the “top rank” area of the users list.

In Jin et al. (2008) a user reputation model is applied, in the framework of the Digital Library