Argumentation-Based Learning for Communities of Practice

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ABSTRACT

Argumentation has been pointed out as an important means to foster learning. However, contemporary argumentation tools only poorly support the learning dimension. This is mainly due to their emphasis on formal models, which does not align well with the learning process. This article presents CoPe_it!, an innovative web-based tool that supports collaboration and augments learning through argumentative discourses. The tool provides the means to manage individual and collective knowledge by adopting an incremental formalization approach. The authors demonstrate the tool's applicability to Communities of Practice and the authors discuss the potential of their approach in the context of e-Learning.

Keywords: Argumentative Collaboration, Communities of Practice, E-Learning, Informalizing Learning, Personalizing Learning

1. INTRODUCTION

Most organizations nowadays support learning activities through seminars and other traditional learning activities. Such activities are based on the widely recognized fact that one of the best ways to keep a knowledge worker’s competence high is through continuous learning (Rosenberg, 2001). Yet, such means of “codified and transferred” learning have been criticized as not sufficient (Robey, Khoo, & Powers, 2000). To overcome problems that arise due to the gap in the management of tacit and explicit knowledge, new approaches - based on networked technology - have emerged. One such approach focuses on collaborative environments that aim to support collaboration among groups of people forming Communities of Practice (CoPs). The term CoP is used to define a group of people with “common disciplinary background, similar work activities and tools and shared stories, contexts and values” (Millen, Fontaine, & Muller, 2002). Such contexts are believed to be one of the most promising solutions to promote what is commonly known as “collective intelligence” or “organizational memory” (Ackerman, 1998).

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Work presented in this paper concerns learning in collaborative environments; in particular, it addresses the issue of augmenting learning through argumentative discourses carried out in a web-based tool. The proposed tool is able to appropriately capture, represent and process the associated data and knowledge by shifting the focus from simply collecting and representing information, which is a characteristic of today’s argumentative collaboration environments, to its meaningful assessment and utilization. Learning theories involved with communities and collaborative work conclude that these settings do foster learning (Hoadley & Kilner, 2005) and that CoP members engage in the process of “collective learning” (Wenger, 1998). According to Resnick (1987), argumentation is an essential learning element as it permits CoP users to develop and refine their points of view, which allows participants to share knowledge and learn to negotiate conflicting opinions.

Designing software systems that can adequately address users’ needs to express, share, interpret and reason about knowledge during an argumentative collaboration session has been a major research and development activity for more than twenty years. Technologies supporting argumentative collaboration usually provide the means for discussion structuring and visualization, sharing of documents, and user administration. They support argumentative collaboration at various levels and have been tested through diverse user groups and contexts. Furthermore, they aim at exploring argumentation as a means to establish a common ground between diverse stakeholders, to understand positions on issues, to surface assumptions and criteria, and to collectively construct consensus.

While helpful in particular settings, the above solutions prove to be inadequate in cognitively complex situations. In this context, our work focuses on the development of a web-based tool, namely CoPe_it! (http://copeit.cti.gr/), which is capable of tackling the diversity and complexity of the above issues, the ultimate goals being to make it easier for users to follow the evolution of an ongoing collaboration, comprehend it in its entirety, and meaningfully aggregate data in order to resolve the issue under consideration.

2. EXISTING APPROACHES

A plethora of tools is already available to support learning activities in diverse settings (Scheuer, Loll, Pinkwart, & McLaren, 2010). In this section, we focus on representative systems that support computer-supported collaborative learning (CSCL) and argumentative collaboration. As far as CSCL is concerned, Debatepedia (http://wiki.idebate.org) is a wiki encyclopedia of debates, arguments, and supporting quotations. It is based on a Wikipedia like interface and its debate pages have a simple unique pro/con “logic tree” structure containing unstructured arguments. QuestMap (Conklin, Selvin, Buckingham, & Sierhuis, 2001) allows graphical representation and aims at capturing the key issues and ideas during meetings and creating a shared understanding within a team. Compendium (http://compendium.open.ac.uk/) is a desktop application that supports dialogue mapping and conceptual modeling in a meeting scenario, and can be used to gather a semantic group memory.

In the context of argumentation theory, systems supporting the visualization of argumentation have played a considerable educational role by supporting the teaching of critical thinking and reasoning skills. Cohere (De Liddo & Buckingham, 2010) is a web application for structuring and visualizing information and arguments, publishing ideas and discovering new intellectual peers. Araucaria (Reed & Rowe, 2004) and Belvedere (Suthers, Connell, Lesgold, Paolucci, Toth, Toth, & Weiner, n.d.) support functionalities such as contextual analysis and argument mapping. Argumentation systems such as Carneades (Gordon, Prakken, & Walton, 2007) and ArguMed (Verheij, 2003) are able to traverse user created diagrams to derive acceptable arguments. Finally, a number
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