Towards semantic descriptions of collaboration indicators to support collaboration models transferability

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Keywords: Collaborative learning, Transferable collaboration model, Collaborative indicators, Collaboration analysis

1 Research

Students around the world are currently taking advantage of e-learning platforms to support their learning, and one of the most important features in some of these platforms is their support for collaborative learning. In this context, a collaboration analysis is necessary to ascertain whether collaboration takes place. Having this in mind, data mining techniques are often used to identify student collaboration indicators based on their forum interactions (see relevant literature elsewhere).

The Collaborative Logical Framework (CLF) system, based on an approach used by international Cooperation Agencies, sets guidelines to promote participation in CSCL [1]. It is fully integrated into dotLRN/OpenACS as one of its packages and consists of making the students work consecutively in three ways: 1) solving tasks individually 2) working in cooperation with their colleagues' to improve own solutions, and 3) working all together to reach an agreement for the joint solution. Moreover, the system gathers the students' performance to infer how they work in the course. By means of a varied number of metrics, derived from the analysis of forum interactions, the system provides their behavior related to the collective task. In particular, these metrics focus on ratings given to their colleagues' contributions, on the revised versions they create of their solutions after the colleagues feedback received, and studying the actions they carry out before and after a specific interaction. This information helps the student and the tutor to monitor the tasks, and on the other it is used to get collaborative indicators, which define the learner's reputation.

Domain-independent statistical indicators of students' interactions in forums (conversations started, messages sent, and replies to student interactions) were identified elsewhere by mining non-scripted interactions in dotLRN and evaluated the benefits of their awareness by students [2]. In this context, the objective of this work is to enrich student's meta-cognitive support in the CLF by adding these automatically inferred and validated indicators (focused on initiative, activity and regularity, and perceived reputation) using the CLF metrics to express them.

If possible, our intention is to use available standards and specifications to semantically model the indicators and support transferability of collaboration models among different systems.

Besides well-known benefits of collaboration awareness in motivating students' collaboration, indicators inferred can be also used to provide adaptive features to the e-learning system. Thus, depending on the student collaboration profile and behavior, the system can react accordingly by providing individual suggestions. The goal here is to identify recommendation opportunities that guide the student to perform specific actions in order to help on the task, encourage participation and improve team work.

2 Suggested Topics for Discussion

- Descriptions of collaboration indicators modeling in terms of available standards to support transferability of collaboration models among systems.
- Elicitation of recommendation opportunities to manage and guide collaboration.

3 Biography

Mr. Jesús L. Lobo has an MSc in Computer Engineering (Deusto University, Spain, 2003) and he is working at Tecnalia Research & Innovation as Projects Responsible and ICT Consultant. His work is mainly focused on key activities such as e-skills, technology for learning, ICT certification processes, and ICT and lifelong learning activities.

Dr. Olga C. Santos is aDeNu's R&D Technical Manager and has contributed to 14 projects and over 150 papers and 50 scientific committees researching on affective inclusive personalized adaptive navigation support in ubiquitous standards-based social online learning environments.

Dr. Jesus G. Boticario is professor at the Computer Science School and has held several positions at UNED. He has published over 200 research articles and participated in 24 R&D funded projects. Head of aDeNu research group, scientific coordinator in European and National projects and co-chairs of workshop series on User Modeling and Accessibility.

Relevant Publications

1. Santos, O.C., Rodríguez, A., Gaudioso, E., Boticario, J.G.: Helping the tutor to manage a collaborative task in a web-based learning environment. In: AIED2003 Supplementary Proceedings, 153-162 (2003)
2. Anaya, A.R., Boticario, J.G.: Content-free collaborative learning modeling using data mining. In: User Modeling and User-Adapted Interaction 21, 181-216 (2011)