Preface

With the fast development of Internet and other IT technologies, online learning is becoming a common approach in distance learning and teaching activity. The online distance learning is based on two fundamental fields: one the one hand, the computer supported collaborative learning (CSCL) theories and, on the other, the computational technologies that support the online learning activities aiming to achieve the learning goals. Nowadays, both fields have done considerable progress. CSCL theories are providing the online learning community with models and approaches that contribute to the success of online learning and teaching, while the maturity of Web technologies and the emergence of other large scale computational systems such as Web, Grid and P2P are enabling researchers and developers to put in practice online learning and teaching models. Despite the considerable progress in both fields, there are still plenty of issues to investigate on how to effectively put the emergent computational technologies to fully support online learning and teaching activity. Two such issues are monitoring and assessment in online learning environments.

Why monitoring and assessment? One big issue of real virtual campuses and online learning activities is to achieve the success in learning outcomes and academic goals. Put differently, this means to make the online collaborative system efficient and effective for the online students and teachers. Unlike traditional face-to-face learning and teaching where students feel themselves as part of the classroom, participate in the activities being carried out daily in the classroom and can have the advice and attention of their mates and/or the teacher who daily tracks students’ activity, in online learning systems, students are faced to isolation, lack of feedback from their mates and/or the teacher, lack of knowledge about the learning progress, etc., which could eventually cause abandonment of the online learning studies. In fact, the situation becomes more complex if the learning activity is developed not only at online classroom level but also at group level; in this latter case, the interaction among members of the group plays an important role in achieving the learning goals. Further, difficulties arise to teachers in online collaborative learning systems. It is more difficult to assess the learning progress of the students, give them prompt support, identify problems, etc., especially when it comes to evaluate and assess not only the individual progress and learning outcomes but also the progress and learning outcomes of the online groups. Monitoring is thus a key approach to overcome such intrinsic difficulties in online collaborative learning systems.

In this book are presented up-to-date research approaches for monitoring and assessment on online collaborative learning systems. The book aims to provide researchers and developers of online collaborative systems with approaches for effective and efficient means that would assist e-learning students and teachers with precise and relevant information regarding the ongoing online learning activity at both individual and group levels. Moreover, approaches in the book appeal for the timely support to learners and teachers, that is, learners and teachers have to know both the group and individual activity
performance as the learning process gets developed. The monitoring process is thus a means for groups and professors to act appropriately according to the group and individual performance.

Among the many features highlighted in the book, we could distinguish the following:

Conducting the learning activity through adaptation and personalization. Professors design the academic activities with concrete final learning goals, whose achievement require to continuously re-conduct the learning process as a way to assure that intermediate goals are successfully achieved. Adaptation and personalization of the information and instruction offered to the users in on-line e-learning environments are considered to be the turning point of recent research efforts.

Monitoring the progress. In collaborative learning activities that span over a long period of time, monitoring the group and individual progress is essential. Monitoring the progress, identifying all potential problems within groups or students and quickly resolving them will contribute to the successful achievement of the learning goals.

Scaffolding learners. In real complex online collaborative learning activities, groups are encountered with many difficulties that could be originated by the technical content of the learning exercise and/or by the intrinsic complex nature of the collaborative work developed inside small groups. Therefore, scaffolding learners whenever necessary is essential to the learning process. To do this, professors and groups involved in the learning activity need to continuously know “where they are”, which members and/or groups need professors’ intervention. Students can encourage their mates within a group and professors can encourage groups and/or students to collaborate in their activity.

Decision making and predictions. Activity planning is typical in long time learning exercises. However, achievement of final objectives could require using updates and strategies not initially planned, which may require taking new decisions. Clearly, groups can make better decisions if they are provided with critical information about their activity so that they can envisage “where they are headed to”.

Tracking students’ involvement. Two major related problems in real e-learning courses are: (a) assuring that students will reach a satisfactory level of involvement in the learning process, and (b) to avoid high abandonment rates. Tracking is thus very useful to identify non-attending students or groups and intervene to ensure student involvement in the collaborative learning process.

HOW THIS BOOK IS ORGANIZED

The chapters in this book have been divided into three key areas: (i) Tools and Applications for Monitoring in e-learning, (ii) Tracking, Feedback and Monitoring, and (iii) Assessment Approaches.

Tools and Applications for Monitoring in E-Learning

The chapters in this area are organized as follows:

In Chapter 1 “Web-based Multimedia Tools for Monitoring and E-learning” by Bellas et al., the authors propose a methodology focused in monitoring both learning and resources. An application of Web-based multimedia tools as a complement to the traditional e-learning materials to improve the quality of teaching is presented. The authors also show the advantages of providing the students with more familiar multimedia materials suitable for being transported and consulted in mobile devices.

Botsios and Georgiou, in Chapter 2 “Standardization in User Modeling and Learning Objects Retrieval: Recent Contributions,” approach the adaptation and personalization of the information and instruction
offered to the online learners and groups in online e-learning environments. They consider the adaptive educational hypermedia systems (AEHS) and address the need of standardization of user assessment in such environment. Thereafter, the authors provide a classification of some basic assessment aspects of an AEHS user as well as the basis for the development of a generic architecture for the retrieval of standardized learning objects.

Chapter 3, “Virtual co Learner: An approach against learner’s isolation in asynchronous e-learning,” by Georgiou et al. introduces the virtual co learner system aimed at using the behavior of a learning companion suitable to the user’s cognitive and learning styles. The proposed collaborative system runs asynchronously and reuses digitized material in the system. The motivation behind the system is to increase matching of real and simulated learners who have similar cognitive characteristics so that learning procedure becomes more efficient and productive.

Brent et al., in Chapter 4 “Time-Shifted Online Collaboration: Creating Teachable Moments Through Automated Grading,” consider online collaboration in a distributed e-learning environment. The authors describe the usefulness of Web-based automated essay grading to provide extensive real-time data for monitoring and enhancing e-learning activities. By examining real data from student use of this software, it is evidenced that students take advantage of the proposed learning environment to revise and resubmit their work, which helped improving their final. The success of the proposed learning environment resides in its ability to provide detailed, personalized feedback to students in real time.

Tracking, Feedback and Monitoring

The chapters in this area are organized as follows:

Chapter 5, “Expertiza: Managing Feedback in Collaborative Learning” by Gehringer, addresses the issue of providing feedback to students and work teams by assessing project work. The author proposes Expertiza – a system for managing all kinds of communication that is involved in assessment of project work. Experimental studies showed that by using this system students are capable of producing work that can be used for teaching purposes.

Shwarts-Asher, in Chapter 6 “Improving the performance of virtual teams through team dynamics,” approaches the operation of virtual teams in organizations. The study is based on qualitative data collected by interviewing 20 virtual team managers and members of 20 different organizations. The objective is to analyze what projects virtual team participated in, how virtual teams operate and the difficulties virtual teams face.

In Chapter 7, “Monitoring Activity in E-Learning: A Quantitative Model Based on Web Tracking and Social Network Analysis” by Mazzoni and Gaffuri, the authors focus on the monitoring of students’ activities in e-learning. To that end, the authors start from a socio-cultural approach to the notion of activity, which is conceived in terms of actions, which, in turn, are composed by operations. The definitions of activity, action and operation are then used in defining a model for monitoring activities in e-learning. The model accounts for indicators measure individuals’ actions within a Web environment. Moreover, the authors consider the application of social network analysis to Web interactions occurring in collective discussions within Web environments.

Chapter 8, “Monitoring Students’ Activity and Performance in Online Higher Education: A European Perspective” by Lera et al., introduces the reader in the new scenario defined by the recently created European Higher Education Area and by the increasing use of learning management systems in higher education worldwide. Then, authors discuss the importance of monitoring students’ and groups’ activity
and performance, and review some of the monitoring tools already available in the market. Finally, they aim to identify which the informational necessities of online instructors and students are, and propose some graphs for the monitoring process.

Persico et al., in Chapter 9 “A Model for Monitoring and Evaluating CSCL,” deal with the issue of monitoring and evaluating CSCL processes. The approach is based on effective organization of information drawn through monitoring online courses. The authors present thereafter a general purpose model for organizing this information, which serves to make the monitoring, assessment and evaluation processes more systematic and effective.

Assessment Approaches

In Chapter 10, “Nonverbal Communication as a means to support collaborative interaction assessment in 3D Virtual Environments for learning” by Pérez Negrón and de Antonio Jiménez, the learning scenario is situated in 3D collaborative virtual environments in which the user’s graphical representation is the means to express nonverbal communications. The proposal aims at inferring indicators of collaborative interaction and their use to foster collaboration in a learning task situation. An exploratory study that consisted in the analysis of a real life situation during a collaborative task accomplishment exemplifies the proposed approach and its empirical analysis.

Burdescu and Mihăescu in Chapter 11, “Improvement of self-assessment effectiveness by activity monitoring and analysis,” tackle the self-assessment as one of the crucial activities in e-learning. The authors present a recommender software system that aims at improving the effectiveness of self-assessment activities. The methodology for obtaining improvement of self-assessment is based on embedding knowledge management into the business logic of the e-learning platform. Techniques such as Naive Bayes Classifier are used for obtaining the learning resources that need to be further accessed by learners.

Chapter 12, “Computer-Supported Collaboration in Language Learning” by Zou, discusses collaboration between language learners while using computer-based tasks. Monitoring and assessment for the collaborative language learning are explored based on interview, observation and questionnaire data from both teachers and students at two UK university language centers. The results of the study indicate that collaboration in computer-based environments can help students to develop their language skills.

Pantaleón and Sáiz in the last chapter, “Proposal of a set of reports for Students’ Tracking and Assessing in E-Learning Platforms,” motivate the need of suitable tools for the monitoring and follow-up of the students to facilitate the instructors’ task. The authors propose a set of reports, designed from an educational point of view, to assist instructors to carry out the tracking and assessment task. An architecture software for the implementation of such monitoring tools is also presented.

FINAL WORDS

Monitoring and assessment in online collaborative environments is a major research theme in CSCL research community. It aims at assisting e-learning students and professors with precise and relevant information regarding the ongoing individual and group activity. The monitoring process is thus a means for groups and professors to act appropriately according to the group and individual performance. The chapters collected in this book provide new insights, findings and approaches not only on analytical models for monitoring and assessment but also their achievement and use through emergent computational systems. Researchers will find in this book the latest trends in these research topics. On the other hand, teachers will find practical insights on how to use monitoring and assessment approaches in their
daily task. Finally, developers from CSCL community can be inspired and put in practice the proposed models and evaluate them for the specific purposes of the online courses.

We hope the readers will find this book useful and share with us the joy!

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