

## **Self-Regulated Learning in Technology Enhanced Learning Environments**

### **Part 1 of 3: Technology Enhanced SRL-Learning Strategies in Pre-School and School Students.**

To be able to self-regulate one's own learning is being considered to be one of the 21<sup>st</sup> century key competences. In our European societies lifelong learning is becoming increasingly important, i.e. learning is not only taking place in school, but also out of school and beyond school. Nonetheless, school remains one of the most important places for learning. In our schools, we observe a gradual shift from a teacher-oriented paradigm to a learner-oriented paradigm. This shift places more autonomy on the learner; he is given more freedom in learning, but also more responsibility is placed on him in choosing learning content and managing his own learning. Self-regulated learning is therefore becoming increasingly important in education.

The symposium is intended to be presented in three parts with three contributions per part. Altogether, we have eight presentations from authors from six European countries and one from an U.S. American author. The first part of the symposium addresses technology enhanced SRL-learning strategies in pre-school and school students. The second part focuses on the importance of feedback in SRL while the last part is centered on the role of technology in SRL.

The three contributions of the first part of our symposium address the topic of self-regulated learning in formal education. Ton Mooij from Radboud University Nijmegen (ITS) and Open University of the Netherlands (CELSTEC) in the Netherlands presents a theoretical framework based on pedagogical, didactical and organisational considerations which he suggests should be implemented in schools to improve learning and self-regulation. He also reports on an empirical study carried out in ten Dutch preschools and primary schools which were run according to his theoretical framework.

Paula da Costa Ferreira and Ana Margarida Simão from the University of Lisbon in Portugal designed a platform which was to fit primary school children's learning needs and foster self-regulated learning. They also present the results of an empirical study on the effects of the platform which they did with 9 to 10-year-old children who studied English as a second language.

Fátima Duarte and Ana Margarida Simão from the University of Lisbon in Portugal present the results of an empirical study of the learning paths of 11<sup>th</sup> grade students who were working with the Web to find out how these students manage to collect information and self-regulate their learning. The results should be helpful in finding intervention strategies and developing technological tools to support the acquisition and improvement of self-regulated learning.

### **Self-regulation of Playing and Learning in Pre-School and Primary School Children**

Ton Mooij [t.mooij@its.ru.nl](mailto:t.mooij@its.ru.nl)

Radboud University Nijmegen (ITS) and Open University of the Netherlands (CELSTEC), Netherlands

In preschool and primary school pupils differ in many respects, including the capacity to self-regulate their playing and learning processes. Relative autonomy or self-regulation in development, and relatively high attainment usually co-vary already before a pupil starts preschool. However, at preschool entrance, development and educational processes are usually adapted to the mean levels of the pupils in the playing group or class.

A theoretical framework is sketched in which pedagogical-didactical and organisational conditions support diagnostically based playing and learning processes for each pupil in a preschool group or primary class. ICT characteristics to further support differentiated playing

and learning processes are specified as well as possibilities to develop playing and learning in optimal ways for both pupils and school. One of these possibilities concerns self-regulation of a pupil in the group or class context, which is most important for the pupils achieving highest in cognitive areas.

An experimental study is being carried out in 10 preschools and primary schools to develop and realise the pedagogical-didactical and organisational conditions, ICT support, and procedures to make playing and learning optimal.

The results reveal some important characteristics of school innovation processes that may block or promote improvement processes in educational practice.

### **Adapting Technology to Develop Self-regulated Learning Strategies in Primary School Students**

Paula da Costa Ferreira [paula.costa.ferreira@gmail.com](mailto:paula.costa.ferreira@gmail.com)

Ana Margarida Veiga Simão [amsimao@fp.ul.pt](mailto:amsimao@fp.ul.pt) Lisbon University, Portugal

This study presents how a platform was designed to fit children's learning needs in an ESL classroom. This process was conducted with a basis on Zimmerman's theoretical conception of Self-regulated Learning and instructional design principles centered on the constructivist perspective. Essentially, the platform was designed to provide clear learning goals within a defined learning process; to present learners with multiple perspectives of the content, as well as various forms of representing it in a relevant learning context; to allow learners to take responsibility for their own learning by becoming aware of the learning process and strategies; and to cognitively challenge learners, providing them with a high level of interactivity and encouraging collaboration with colleagues. Data were gathered and analyzed with qualitative techniques, such as observations, structured interviews and content analysis of artifacts of a sample of 15 students aged 9 to 10 and their teacher. Results suggest the teacher and students' perceived their teaching/learning experience positively, students developed Self-regulated Learning strategies and improved their academic performance significantly in terms of oral and written production. Lastly, key implications for teaching and learning with a new approach to technology are discussed.

### **Technology Enhanced Learning Environments for Self-regulated Learning: a Framework for Re-appreciation of the Teaching/Learning Process**

Fátima Duarte [fatimacruzduarte@gmail.com](mailto:fatimacruzduarte@gmail.com)

Ana Margarida Veiga Simão [amsimao@fp.ul.pt](mailto:amsimao@fp.ul.pt) Lisbon University, Portugal

Information Technology has brought many new challenges to learners within contemporary academic contexts in the sense that the access to different sources of information involves new ways of planning and accomplishing learning tasks, as well as entails specific skill development.

As the new TELEs contribute to a re-appreciation of the teaching/learning process, we aim to study the learning paths of 11th grade students in order to capture their perspectives related with SRL and information gathering by using the Web. With this study, by analyzing data from observations, stimulated recall and interviews, we expect to acquire information that will allow us to construct and develop intervention strategies, orientations and suggestions for pedagogical practices as well as new pedagogical and technological tools that will facilitate teaching and learning in academic settings in future professional contexts.

## **Self-Regulated Learning in Technology Enhanced Learning Environments**

### **Part 2 of 3: The Importance of Feedback in Technology Enhanced Self-Regulated Learning**

There are a number of models that have been developed on self-regulated learning. Probably the best known model is that of Zimmerman who assumes that the process of self-regulated learning can be divided into three stages: (1) planning a learning activity, (2) executing and monitoring the learning activity and (3) evaluating the learning outcome. Although this is a rather simple model and actual learning processes are probably much more complex, it does provide for a basis from which may venture to explore the process of self-regulated learning more in depth. In this part of our symposium, we would like to focus on the role of feedback in self-regulated learning.

While planning the learning activity, the student will not only have to assess the requirements of the task that lies ahead of him, but also his own resources that are available to him to cope with the task. Students' self-concepts, the beliefs they hold concerning his abilities, their self-efficacy beliefs, all these would count as own resources, and although these were built up on the basis of the experiences the students had in similar learning situations, they were also formed by the feedback they received from their teachers and their peers. Feedback will also play an important role in the second stage of SRL: executing and monitoring the learning activity. Comments from teachers and peers might make students aware of alternative strategies to cope with the task and thus influence SRL. And even in the third stage, feedback is important. Feedback from teachers and peers might help students to evaluate their learning outcome from a different perspective.

As Tony Fisher and Colin Harrison from Nottingham University in the U.K. point out, recent survey carried out have uncovered student dissatisfaction with feedback received in higher education. They have therefore developed an online system for student activated feedback which allows students to trigger feedback from peers and staff. This system offers students the opportunity to deepen their knowledge and enhance their self-regulated learning.

The role of teacher feedback is also the theme of the contribution by Maureen Snow Andrade from Utah Valley University in the U.S. Based on theories of transactional distance and self-regulated learning, she has developed a model of self-regulated distance learning. In her empirical study, she investigated the role of teacher feedback in helping students in a distance course to benefit from the course components on self-regulated learning.

Scaffolding students' learning activities is also way of providing them with feedback. Per Bergamin and Egon Werlen from the Swiss Distance University of Applied Science in Switzerland developed a module for collaborate scaffolding with multiple choice imbedded in an LMS to scaffold students' learning activities by providing them with feedback. The authors will present the results of an empirical evaluation of the module.

#### **Student Activated Feedback: Deepening Student Knowledge while Increasing Self-regulation on a Masters Course in Education.**

Tony Fisher [Tony.Fisher@nottingham.ac.uk](mailto:Tony.Fisher@nottingham.ac.uk)

Colin Harrison [colin.harrison@nottingham.ac.uk](mailto:colin.harrison@nottingham.ac.uk) University of Nottingham, U.K.

Recent National Student Survey reports in the UK (for example HEFCE, 2007) have uncovered student dissatisfaction with feedback received in higher education. The literature emphasises the value of formative feedback over summative feedback for learning (eg. Brown et al , 1996; Maclellan, 2004).

This paper reports the development and evaluation of 'student activated feedback (SAF)' units, provided as enhancements of an online master's-level teacher education course developed by the University of Nottingham for use with international students. These students

are practising teachers who are studying to gain the International Postgraduate Certificate in Education in order to increase their capacity to make links between their day-to-day practice and the philosophy and psychology of education.

The Nottingham SAF project has developed models of online formative feedback that offer opportunities for students to read coursework written by other students, and to view expert podcast commentary on that coursework. The aim was to make best use of technologies to reduce the burden on academics while offering additional benefits to students. The SAF units invite students to take opportunities to deepen their knowledge while enhancing self-regulation in their learning.

### **The Role of Teacher Feedback in Self-regulated Distance Learning**

Maureen Snow Andrade [Maureen.Andrade@uvu.edu](mailto:Maureen.Andrade@uvu.edu) , Utah Valley University, USA

Distance learning that incorporates technology enhanced learning environments provides a solution to the ever-increasing global demand for higher education. To be successful in these contexts, learners must be self-regulated, or have the ability to control the factors affecting their learning. Based on the theories of transactional distance (Moore, 2007) and self-regulated learning (Zimmerman & Risemberg, 1997), the Model of Self-Regulated Distance Learning has been applied to online distance courses to increase learner self-regulation and success (Andrade & Bunker, 2011a, 2011b). The current study examined the role of teacher feedback on the effectiveness of self-regulated learning components in English language courses, which enrolled students from over 20 countries and were based on this model. The qualitative study examined student responses and related teacher feedback to self-regulated learning activities to answer the research question: What is the role of teacher feedback in helping students gain full benefit from the self-regulated learning course component? Findings indicated that students were doing the activities superficially, with inappropriate sequencing, or not doing them at all. Teachers were not providing adequate feedback and failed to notice grading and structural problems in the learning management system. Consequently, changes were made in course set-up and teacher training provided.

### **Self- and Co-regulative Learning with Multiple-Choice in a Technology Enhanced Learning Environment (TELE)**

Per Bergamin [per.bergamin@ffhs.ch](mailto:per.bergamin@ffhs.ch) & Egon Werlen, Swiss Distance University of Applied Sciences, Switzerland

Learning in TELE requires self-regulated learning (SRL) that requires decisions about what, how, when, and where to learn. An approach for fostering SRL is the use of scaffolds. Our approach is collaborative scaffolding within a competition framework. Generally scaffolding is effective and has a medium effect size (Van de Pol, Volman, & Beishuizen, 2010; Swanson & Lussier, 2001). In a meta-analysis, Johnson, Maruyama, Johnson, Nelson, & Skon (1981) show cooperation as more effective than interpersonal competition and individualistic efforts. Furthermore an additional justification of answers can enhance learning performance (Falze, Dahar, & Niwaz, 2010).

Within an existing LMS we developed COSAMUI (Collaborative scaffolding with multiple-choice). The module includes the following remote but cooperative learning activities: Creating groups of two students, planning time-management, proposing and commenting answers, reviewing answers, solving questions and monitoring results.

The  $\alpha$ -Version has been exposed to a test for usability with six students, demonstrating that COSAMUI works. Currently the module is set up in a separate learning unit. We are investigating COSAMUI within a counterbalanced measures design, analysing quantitative data on performance, learning motivation and online activity, and rating qualitative data on quality of comments and peer reviews. Results of the study will be presented.

## **Self-Regulated Learning in Technology Enhanced Learning Environments**

### **Part 3 of 3: The Role of Technology in Self-Regulated Learning**

While the topic of self-regulated learning has become more and more important in the last three decades, technological developments have played a major role in designing and implementing environments that had the potential to actually support the acquisition and improvement of self-regulated learning. A major advantage of technology enhanced learning environments (TELEs) is that they can individualise learning processes to an extent that is impossible to achieve in a traditional classroom. Not only do they allow students to personalise their learning environments, they also give them more freedom to decide when and where to learn, and they are able to provide students with feedback quickly and on time to a much better degree than a teacher can in a traditional school setting. Finally, TELEs allow students to directly communicate with each other and the teacher thus giving them the opportunity to establish communities of practice.

Learning Managements Systems (LMSs) are one way of creating a technology enhanced learning environment. The research group from the Instituto Piaget in Portugal will report on their study of a Massive Online Closed Course for teaching higher education teachers to use Moodle. According to the authors, the main purpose of the course was to promote self-regulated learning through interaction and the creation of a community of practice among the participants.

Moodle was also used in a study by Ana Remesal from the Universidad de Barcelona in Spain. The LMS was part of a blended learning course for teacher students at the university in which they were supposed to develop their SRL learning strategies through collaborative problem solving. According to the author, peer assessment and consultation played a key role in the process of developing SRL learning strategies and group learning.

The research group from the University of the Sacred Heart in Italy used blogs in an online training to promote creativity, self-esteem and critical thinking. The training involved students from a master degree programme in management and economics. The authors assume that the online training will foster SRL which in turn will increase creativity, self-esteem and critical thinking. Results of the training will be presented at the conference.

#### **Promoting Self-regulated Learning in a Massive Online Course**

Patrícia Fidalgo [fsantos@almada.ipiaget.org](mailto:fsantos@almada.ipiaget.org) [pfidalgo@almada.ipiaget.org](mailto:pfidalgo@almada.ipiaget.org) , João Paz [jpaz@almada.ipiaget.org](mailto:jpaz@almada.ipiaget.org)

and Fernando Luís Santos [fsantos@almada.ipiaget.org](mailto:fsantos@almada.ipiaget.org)

Instituto Piaget, Almada, Portugal

This communication will present the final structure of implementation and management of a Massive Online Closed Course (MOCC) for training Higher Education teachers to use Moodle.

After doing a pilot study to test the structure of the MOCC in the second semester of 2010/2011 academic year, some adjustments have been made before applying the course in the Learning Management System (LMS) used in the Higher Education Institution in which it was implemented. Some of the motivation and activity procrastination issues detected in the pilot study demanded some instructional design adjustments and some of the tools to assess our goals were further developed.

The main purpose of the course is to promote self-regulated learning (SRL) through interaction and the creation of a community of practice (CoP) among the participants. A group of instructors assured the management and an ongoing monitoring of the MOCC using several LMS tools especially for synchronous and asynchronous communication and interaction.

### **Peer Assessment for the Development of Self-regulated Learning in the Social Context**

Ana Remesal [aremesal@ub.edu](mailto:aremesal@ub.edu) , Universidad de Barcelona, Spain

The paper presents results of a qualitative study on the development of self-regulated learning strategies via the development of collaborative working competencies. That is, SRL is conceived embedded in the social context, from a sociocultural perspective, and becomes learning in the group; hence, we uphold the need to connect SRL and co- and shared regulation in the group. 55 student teachers participate in this study, working in 11 collaborative teams during an entire academic year in a blended modus supported by the LMS Moodle. By means of different externalization technological devices and activities which promote self-regulation and reflection, the students share their work processes to address complex problem solving activities in the field of educational psychology, from a problem-based learning approach. Peer assessment and consultation prove to be a key instrument in this process of learning to regulate the individual learning and the group learning. Twice in the course peer assessment and consultation took place in order to promote a peer-helping process. Qualitative content analysis of the students' interaction in the LMS, of the group working reports and of individual questionnaires of learning styles at the beginning and at the end of the course has been carried out.

### **A Self-regulated On-line Training to Promote Creativity, Self-esteem and Critical Thinking in Adults.**

Barbara Colombo [barbara.colombo@unicatt.it](mailto:barbara.colombo@unicatt.it) , Micol Mari, Martina Spadola, Chiara Valenti Catholic University of the Sacred Heart, Milano, Italy

This research project was aimed at enhancing three life skills - creativity, critical thinking and self-esteem using self-regulated learning promoted by blogs.

The choice of the blog as a tool to promote self-regulated learning is based on the fact that blogs make students more aware of their learning experience (Churchill, 2009) and promote strategic thinking and cooperation (Colombo & Sala, 2011). Moreover, blogs improve self-awareness whilst improving communication (Lee,2009) stimulating the building of interpersonal relationships as well as personal commitment to online contributions.

The training which involved 25 students of a master degree in management and economics, included a pre-post evaluation of the target skills. For this analysis, several standardized instruments were used, together with two questionnaires designed specifically to assess self-esteem and critical thinking.

The online course was set on blogs using a narrative structure. Each episode included a number of short activities, linked to the narrative path: participants were asked to participate in a cooperative way. The narration was also enriched by metacognitive prompts.

Results clearly show how the training has been effective in promoting the target skills, and also allowed to highlight their mutual influences of three different life skills.