Abstract[1]

Education: Self-Regulated Learning in a E-learning in Chemistry Virtual Classroom

The virtual Chemistry classroom is a learning environment for students who are willing to expand their knowledge of Chemistry, but have no opportunity to do so in their schools for various reasons. The operation of the virtual Chemistry class started in 2014, and included a full year of development of learning materials and computerized tasks for a three-year online Chemistry program. In the following year, enrollment started and today, (2018), 24 students have graduated, 82 students are studying in the 12^{th} grade; 157 students are studying in the 11^{th} grade, and 110 students are studying in the 10^{th} grade. The current study follows the first cohort throughout their three years of participation.

It is claimed that certain skills help cope with learning, in general and that are vital in advancing learning, such as Self-Regulated Learning (SRL) skills. This study investigates and characterizes the student learning profiles, self-regulated learning processes (skills and strategies) and tries to establish a connection between these variables and student success in learning Chemistry via COBLE : 'Chemistry Online Blended Learning Environment' (virtual and face-to-face as will be explained) .

Comparison between students' SRL skills and strategies whilst studying Chemistry in two different learning environments, a face-to-face classroom and a virtual classroom, may supply answers regarding the main questions: what are the needed skills and strategies in order to be successful in the virtual Chemistry environment, and can one predict which students will do well studying in a virtual learning environment based on their SRL profile?

The data was collected during the three years of the COBLE course (10^{th}-12^{th} grades) and was obtained by several means, such as: questionnaires, students' scores on tasks and tests, in-depth interviews, etc.

Results indicate that virtual intervention students developed SRL skills over time and were not likely to possess the all-negative SRL profile as much as the face-to-face

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control students. Attitude and interest were higher for intervention students, whereas test strategies and preparation for tests and time management principles for academic tasks were higher for control group students. No correlation between the intervention students' SRL profiles and achievements were found but correlation between involvement and SRL profiles was found for intervention students. Based on the data, influential indicators were isolated and a model for predicting students' abilities to succeed in studying Chemistry in COBLE was developed. This prediction model may enable future prediction of student success in studying Chemistry in a blended environment and the ability to plan for better personalized support.
Key words: Chemistry education; E-learning; Virtual learning environments; Self-regulated Learning; Person-centered analyses, success prediction model.