

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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SELF REGULATED LEARNING IN SPACE BIOLOGY : THE “ALMOST ENGINEERS” CASE IN
BOLIVIA

Abstract

At Universidad Católica Boliviana “San Pablo” research in students is promoted through the inclusion of transversal practices in the different subjects. In this sense, besides the common practices in laboratory in the subject of Molecular and Cellular Biology it was proposed the idea that students develop a scientific project from zero. A group of four female students, the “almost engineers” group chose osmosis as their topic. The planning and experimental set up was guided for the teacher but carried out entirely for the students. At the end of the semester the students presented a paper type report and made a presentation. The “almost engineers” finished the course with high grades. The self regulated learning started out of the classroom when the students saw an opportunity to take their project further by participating in the HyperGES call of the United Nations Office for Outer Space Affairs (UNOOSA) and European Space Agency (ESA). Students related their osmosis experiments with anemia in astronauts. Students learn in the processes of application, to write a project, which includes formulation of objectives, expected outcomes, preparation of budgets and others. After submission of the proposal, the project: Understanding space anemia: effect of hypergravity in the osmotic fragility of erythrocytes was awarded to develop their experiments using the Large Diameter Centrifuge (LDC). Before the trip monthly meetings were done between ESA, UNOOSA and UCB to follow the development of the project, this helped to develop their communication skills. During the research stage at ESA, students had the opportunity to use new equipment which help them to improve their technical skills. At the end of the stage students need to evaluate the collected data and write a final report for the founders. The “almost engineers” experience attracted attention for a number of social and massive media. Currently the outcomes of this experience has lead: One scientific paper in a national scientific journal, one book chapter, they won a second place in an international contest and are currently writing 3 more scientific articles with the data obtained. Moreover this experience show that motivation is the key of self regulation learning. The success of these students have motivate other students interested in Space Biology and currently a new batch of students are starting their own self regulated learning in this topic.