

Research Laboratory in Biochemistry as an Environment of Learning and Integration of newly Undergraduate Students

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Introduction: The dropout and low interest of youths for classroom teaching, within the different educational levels, is a multifactorial and worldwide issue that causes social, economic and human losses. At University, we've searched for new teaching strategies that make learning more meaningful, enabling the understanding of one's course and the dynamics of higher education.

Objective: Propose the preparation and execution of a research project in plant cell culture in a research biochemistry laboratory to create a better learning and integration environment for first-year student.

Material and Methods: Ten undergraduate students attending the first and second semesters of the Pharmaceutical Science Course (2013 and 2015). Students followed the proposed activities: 1- Seminars and videos instructing on laboratory safety (about laboratory safety instructions), working rules and reagents disposal, followed by discussion. 2- Theoretical discussion of the laboratory techniques and equipment handling, simulating experimental conditions. 3- Preparation and execution of protocol to obtain a plant cell culture, with step-by-step discussion with teacher and laboratory staff. 4- Monitoring indicators: protocol qualities, result accuracy, academic improvement and acquirement of motor and behavioural skills within the laboratory. **Results and discussion:** All students increased their weighted mean (15 to 50%) and 90% of students who started the project in the second semester and had disapprovals in disciplines during the first, had a decreased or no disapprovals after starting the activities. At the end of the period, the students were able to critically analyse the data obtained, clearly understand the theoretical concepts employed, organise experimental protocols individually and in group. Some students reported that the work in laboratory was crucial for their stay in the course. **Conclusion:** Results showed that the association between theory and practice in the research laboratory is an efficient and motivating viable strategy. These results also contradict the view that first-year students are not eligible for activities in research laboratories.

Keywords: biochemistry laboratory; dropout; teaching strategies

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