

Enhancing Student Learning in Advanced Level Biology through Problem Based Learning

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Most teachers complain that although they teach with their fullest effort, students fail to succeed. Successful learning should provide hands-on and minds-on experiences for the students. Problem Based Learning (PBL) is an effective method to overcome this challenge where learning is driven by the problem. The main objective of this study was to develop the problem solving ability of students to face real life problems through the classroom activities. The achievement of students in the unit - Nutrition in G.C.E. Advanced Level Biology syllabus was very poor. Hence, PBL was used to improve achievement.

Six parallel Biology classes from three schools in Kandy and Matale districts were selected and categorised as PBL and non-PBL. A diagnostic test was conducted to identify misconceptions. Multifaceted problems were crafted to relinquish these misconceptions in the whole unit. Teachers of PBL classes (3) were trained and guided to teach using PBL and the other teachers (3) were allowed to use their own method of teaching. Students of the PBL group were involved in a variety of activities using all sources of information. Both types of classes were observed and field notes were made. Interviews with teachers and students were conducted and photographs, videos, samples of student creations were also collected to gather more information. By triangulating data three assertions were formulated.

Students in PBL groups constructed their own knowledge by involving in various types of problem-solving activities by searching for information and engaging in different activities. Although they were dependent on their teachers at the beginning, they succeeded to direct themselves for self-learning. Contributions of each member in the groups were enormous in solving the problems. They were able to think beyond 'bookish' knowledge and developed critical thinking ability. They explicitly assessed the meaning and significance of information given to them. They were able to examine the problems with different points of view and used innovative steps to solve problems at some instances drawing out their inborn talents. Every student had an opportunity to exhibit their maximum capacities in this method of learning. Very good presenters were identified. Some unheard voices were brought-up in the class. Some students were able to deliver speeches similar to professionals. Some were well aware of their surroundings and environment. Leadership qualities and team spirit were also identified and developed among them. But in non-PBL classes students learned passively without having opportunities to engage themselves in doing Science and frustration among the students were also noticed. Successful guidance through PBL assisted the students to reach maximum in learning biology. Perfectly crafted problems and careful preparations were essential for the successful implementation of PBL. If teachers can be trained well for PBL approach, students will not only enjoy learning Science, but also develop a meaningful understanding of Science.