

IMPROVING LEARNING ABILITY OF CHEMISTRY CONCEPTS THROUGH COOPERATIVE LEARNING

T. Selvamurali

Postgraduate Institute of Science, University of Peradeniya, Sri Lanka

Since science is an essential component of the secondary level of education, teaching the science curriculum plays a significant role in the education system. Therefore, intensive research is required to identify the best teaching practice that improves the learning abilities and performance of students. The 21st century education lays emphasis on student centered teaching and learning processes with active participation of learners. Thus, design and use of student centered activities have become vital.

This study identifies the difficulties faced by the Grade 10 students and teachers in learning and teaching respectively the chemistry concepts through conventional methods and investigates whether cooperative learning methodology would improve the understanding of these chemistry concepts among students.

A sample group of 130 students from Grade 10 class at three different schools (Hartley College, Nelliady Mathya Maha Vidyalayam and Thevarayali Hindu College) in the Jaffna district was selected and pre- and post-tests and questionnaire based surveys were used as instruments to conduct the study. Initially a pre-test was conducted to the entire sample group of students and the students were divided into experimental and control groups of equal standard based on their performance in the pre-test for cooperative learning and conventional teaching methods to be practiced respectively. The chemistry concepts in which the performance of students was very low (<40 %) were considered during the teaching-learning process. After practicing two weeks of teaching by the respective methodologies, a post-test was conducted and the effectiveness of both approaches was evaluated. Meanwhile, questionnaire based surveys were also carried out among the teachers and students.

The analysis of responses to the questionnaires identified complete dependence of teachers on the textbook for teaching, vast content of the syllabus and inadequate laboratory facilities and resources in schools as the major drawbacks while revealing that few weaknesses of students, such as poor fundamental knowledge in chemistry, memorizing the concepts without proper understanding, inadequate problem based learning and lack of interest in the subject also contributed towards it.

Students' performance in the post-test revealed that cooperative learning process improved their understanding of chemistry concepts over the conventional teaching methodology. Further, an observation based survey was carried out in the classroom for the experimental and control groups using a classroom observation schedule revealed that collaborative group activities improve skills such as concept retention ability, team work, oral communication and time management among the students of the experimental group.