

EFFECT OF USING A NEW PRACTICAL COMPONENT ON STUDENTS' SELF CONCEPT, MOTIVATION AND ACHIEVEMENT IN GRADE 13 CHEMICAL KINETICS: A CASE STUDY AT A SCHOOL IN KURUNEGALA

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Although students would like to achieve the best results in chemistry, many of them cannot reach their target due to poor understanding of the basic concepts of the subject and a lack of motivation. It has become an issue in chemistry education affecting the number of university admissions in science and mathematics streams. This study was carried out with the objective of studying the effectiveness of using practical components on students' self-concept, motivation and achievement in the unit on chemical kinetics taught in Grade 13. A sample of 60 Grade 13 students in a mixed school in Kurunegala was selected. Students were divided into two similar groups by using average marks of two pre-tests with 10 multiple-choice questions based on prior knowledge at ordinary level. Two lesson plans in chemical kinetics were taught separately with and without introducing a new practical component. As the new practical component, the practical component in Unit 12: Principles of chemical kinetics, Grade 12 Science for Technology syllabus was selected considering its relevance to understand the basic concepts taught in chemical kinetics in Grade 13. Questionnaires were used to collect quantitative data regarding students' motivation, self-concept and focus group interview schedules were used to collect qualitative data. Students' motivation after teaching the principles of chemical kinetics (Unit 11) was evaluated using a questionnaire containing 18 questions. Self-concept was evaluated using a questionnaire with 15 questions. The academic performance was evaluated by a post-test that contained 10 multiple-choice questions. Quantitative data were analysed by Microsoft Excel, MINITAB 14, IBM SPSS 22.0 and qualitative data were analysed by thematic analysis. The generated themes in qualitative analysis were self-esteem and improvement of ideas towards academic achievement. The study revealed a significant difference ($p = 0.01$) in the post-test of two groups, and students' motivation, self-concept, and their achievements imply the higher effectiveness in the group of students who were taught chemical kinetics in Grade 13 with new practical component. The study reveals that teaching learning process becomes very effective if the teaching of the theoretical component of the unit is done soon after introducing a relevant practical component.

Keywords: Academic achievement, Motivation, Kinetics, Self-concept