

The Effectiveness of Reflective Learning Strategies in Promoting Students' Conceptual Transfer in the Study of Electro-magnetism

*Fu-Pei Shieh **Jeng-Fung Hung

* Guang-Hua Primary School, Kaohsiung, Taiwan

** Institute of Science Education, National Kaohsiung Normal University, Kaohsiung, Taiwan

Abstract

The purpose of this thesis was to investigate the effectiveness of students' conceptual transfer in the study of electro-magnetism, by means of a reflective thinking and learning strategy. A quasi-experimental design was used in this study.

The experimental group was instructed to implement a reflective learning strategy while the control group still used a traditional learning strategy. The experimental activities were continued for three weeks. Pre- and post-test data were collected after a test was given on electro-magnetism to determine the effectiveness of the new science learning strategy which made use of conceptual transfer. Reflective journals, class worksheets, research journals, videos on teaching and other activities, questionnaires, and students' interviews were also used. The data was analyzed by ANCOVA and the qualitative method.

The results of this research were as follows: (1) No significant difference was found regarding students' conceptual transfer in electro-magnetism learning between the experimental group and the control group ($p > .05$). The experimental group had a significantly higher score on vertical transfer than the control group ($p < .05$). (2) The experimental group was found to have a significantly higher score for students using reflective thinking ($p < .05$). (3) The experimental group was found to have a significantly higher score than the control group on science learning strategy. ($p < .05$). (4) The follow-up survey of students indicated that 90.3% of the experimental group agree that the experimental activities promoted their learning of electro-magnetism, whereas 86% of the students agree that a reflective learning strategy for conceptual transfer helps them learn. (5) The researcher has established a suitable teaching model through experimental teaching.

Keywords: Reflective Learning Strategy, Conceptual Transfer in Learning Electro-magnetism