

分組合作學習對偏遠地區國小高年級學生科學探究能力

之研究—以「簡單機械」單元為例

國立高雄師範大學 工業科技教育研究所 研究生 曾炫鈞

國立高雄師範大學 工業科技教育研究所 教授 朱耀明

摘要

本研究探討由自然與生活科技領域之簡單機械，進行分組合作學習，對偏遠地區高年級學生科學探究能力之影響，研究對象為國小高年級學生，104 學年度學校轉型為混齡教學實驗小學，自然與生活科技領域採五、六年級混齡教學。研究方法採取質、量結合方式，利用科學探究能力問卷、課室觀察、教師教學日誌、學生訪談資料及學生學習檔案等，研究進行中，持續將所收集到的資料，進行歸納、比較與分析，並進行三角校正，提高研究結果的效度。

根據所收集的資料分析，研究結果如下所述：

- 一、分析科學探究能力問卷得出，經分組合作學習模式教學，高年級學生在「發現問題」、「收集資料」、「觀察記錄」有較顯著差異，但在「設計實驗」、「歸納分析」及「知識的建構」這幾個項目表現較不顯著；
- 二、本次科學探究能力問卷效度以內容效度為主，問卷 α 值為 0.85，各分量 α 值為 0.63 至 0.96。因本校位處特偏山區，全校高年級學生僅有 4 人，因此，對於科學探究能力的表現，是採個別學生進行分析和探討，利用敘述性統計，分析所得到的量化資料。
- 三、由質性資料分析顯示，學生的人格特質亦會影響科學探究能力的表現，若學生主動積極參與分組合作學習，且帶領同組學生進行學習，則該生表現出的科學探究能力更佳；反之，若學生是安靜且較被動學習，則展現的科學探究能力則較為普通。
- 四、由質性研究訪談得知，經由分組合作學習教學，讓偏遠地區小校學生，從過去孤獨學習、缺乏同儕學習的學生，轉變能進行小組共同討論學習的機會，有效提升學生在學習自然與生活領域的學習動機與科學探究能力。

關鍵詞：分組合作學習、科學探究能力、自然與生活科技領域

The investigation of Science Inquiry through cooperative learning to the five and six Grade student at the Remote Areas—simple machine as an example

Abstract

The purpose of this study was to investigate Science Inquiry with cooperative learning to the high Grade student at the Remote Areas in simple machine unit. The subjects were five and six grade student in chai-yi connty. The primary school was traslated to mixed-age teaching experimental school. The research was used Student Science Inquiry Scale, classroom observation, teaching journal, student interviews. The results of the study were indicated that:

1. Student Inquiry Scale obtained data show that after a group cooperative learning teaching, students in the "discovery problems", "collect information", "observations" have more significant difference, but in the "design experiment", "inductive analysis" performance and "construction of knowledge" not significant.
2. The questionnaire is based on the ability of scientific inquiry content validity. Questionnaire α value of 0.85, each component α is 0.63 to 0.96. The primary school is located the Remote Areas, there are four high grade school students. The ability of scientific inquiry is to take individual student analysis and discussion. Using descriptive statistics to analyze quantitative information.
3. The level of students' scientific inquiry was related to individual students' learning attitude. If students can actively learn and lead other students to learn, science inquiry will be stronger than that students inactively.
4. By the encouragement and support of the same group of students, passive quiet student experiments and gradual shift to actively participate in group learning activities, scientific inquiry is better than the performance.

Keywords: Cooperative learning, Science Inquiry , Nature and Living Science and Technology Fields