

幾何探索軟體的開發與補救教學研究—以三角形三心探索為例

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摘 要

本研究主要是利用 Flash 軟體開發一個可輔助國中數學教師教學並提供學生觀察、探索的「三角形三心」幾何課程的電腦輔助教學軟體，研究者依九年一貫課程綱要數學學習領域分年細目與現職教師及學生的建議，以及參考幾何認知學習理論設計軟體，並對數學學習低成就的學生實施補救教學，探討實施補救教學之後，對學生數學學習成就與學習態度的影響。

本研究以台北縣某國中九年級數學學習低成就的學生為研究對象，依學生意願參與電腦輔助補救教學活動，實驗為期兩週共五節課，以研究者自編之數學學習成就測驗試題、教學活動講義與課後作業為主要工具，並於實驗結束後再進行個別訪談。實驗研究主要發現如下：

- 一、參與電腦輔助補救教學的學生在數學學習成就測驗上後測成績顯著優於前測成績。
- 二、參與電腦輔助補救教學的學生比未參與電腦輔助補救教學而自行複習的學生在數學學習成就測驗上有較大的進步空間。
- 三、實施電腦輔助補救教學可以提高學生的學習興趣，增加學生的學習信心。

最後，根據研究結果提出若干建議供教師教學及未來研究之參考。

關鍵詞：三角形三心、補救教學、幾何、國中學生

The Development of a Geometry Exploration Software and a study of its Remedial Teaching Effect—Exploring Circumcenter, Incentre and Centroid of Triangle as Examples

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ABSTRACT

This researcher used Flash as the tool to develop a software for the teaching and learning of “Circumcenter, Incentre and Centroid of Triangle” at the junior high school level. The design of this software was based on the Grade 1-9 Curriculum and theories of geometry cognition learning. The accomplishment of this software went through beta test from the school teachers and field teaching of junior high students.

The second purpose of this study was to explore its remedial effect on applying this software into mathematics underachievers. The participates were 9 mathematics underachievers from a class of a junior high school in Taipei County. Every student received the remedial instruction for a total of 5 classes time periods. A pretest-posttest design was used to test the effect of this application. Interviews of students were corrected to understand the acceptance level of this software and attitude toward the remedial instruction. Research results showed that:

1. Students who received the remedial instruction did attain an improvement at the significant level when comparing students posttest scores to pretest scores.
2. Students who received the remedial instruction performed better than those who did not receive any remedial instruction on the improvement of test scores.
3. Students reflected that their learning enthusiasm and confidence were raised after receiving the remedial instruction.

Based on research results, suggestions were proposed as reference for future teaching and research.

Key words: Circumcenter, Incentre and Centroid of Triangle, Remedial Instruction, Geometry, Junior High School