國小自然與生活科技學習之動態影響研究
The Dynamic Investigation in the Subject of Science and Technology for Elementary-school Students

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摘 要

國小學童升上三年級時，對於「自然與生活科技」領域學習是一個新的挑戰。基於自然與生活科技學習異於其他領域部分眾多，從學習動機到學習方法均與其他領域有顯著不同。因此，「自然與生活科技」領域更需探討其學習成效。

影響學童學習自然與人文科技學習成效的相關變數繁多，探討眾多變數中，本研究建構出影響學習成效的五個主要部分，包含個人學習動機、教師教學熱忱、家庭投入程度、創新教學方法，學校推動科學活動等子系統。每一子系統相互連結、互成因果、環環相扣，必須共同討論之。

長久以來，對於國小自然與人文科技學習的相關議題，多為靜態的研究，無法對有關政策的議題進行施行後的評估。本研究以系統動態學的觀點，採用 Vensim 軟體，建立系統模式的架構，並進行動態模擬，以進行分析與說明。經由系統動態模型來模擬學童學習自然與生活科技學習成效之探討。

此一研究，將過去靜態的研究提升至動態層次。本研究透過模擬所得的結果，將提供重要價值的建議，提供教育界之先進及決策者一份重要參考。期望透過本研究提升學童學習自然與生活科技的學習動機及學習成效，亦以該模型為基礎概念，應用於不同學習領域上，進而擴充套用於其他相關研究上。

關鍵詞：自然與生活科技、系統動態、學習成效

Abstract

In the third grade of the elementary school, learning Science and Technology will become a challenge to children. Because of the obviously different learning motivation and style between Science and Technology and other learning areas, we have to discuss the learning achievement of Science and Technology. There are numerous relevant variables to affect of Science and Technology.

This research generalizes five main variables---the learning motivation of a student, the teaching enthusiasm of a teacher, the accompanying time of families, the innovative teaching methods, the Science and Technology activities in the school. Each system is closely linked and inseparable, hence, we should discuss the five variables together.

For long, there have been lots of static studies about the related issues of Science and Technology which couldn't estimate for the effect of the policy issue. In this study, it uses "Vensim" software to establish the system model, analyze and explain the Science and Technology learning achievement of children.

This study promotes levels from the static state to the dynamic state. The results of this study will provide valuable references and suggestions to make decisions. Through this study, it is hoped to promote the Science and Technology learning motivation and achievement of

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