國科會計畫
計畫編號: NSC93-2511-S018-002
研究期間: 9308-9407

發展網際網路評量與試後分析系統並運用於「國中自然與生活科技」(WATA-HiS)網路教學之效益評估(II)

Development of a Web-Based Assessment and Test Analysis System and Assessing Its Effectiveness on Web-Based Instruction of Science and Life Technology in Junior High School (II)

王國華; 黃世傑; 王瑋龍

中文摘要

本研究旨在發展遊戲式網路評量系統-GAM-WATA(Game Assessment Module of the Web-based Assessment and Test Analysis system) ， 其包含 FAM-WATA 的六項策略外，還新增了「Ask-Hint 策略」(消去法-三選一、消去法-二選一、Callin 法)，希望能藉由 GAM-WATA 營造一個具有挑戰性與趣味性的選擇題式網路評量環境，以探討國中學生對於網路遊戲化評量(GAM-WATA, Game Assessment Moduleof WATA System)之 Ask-Hint 策略的感受情形，及其使用 Ask-Hint 策略之動機與心態為何，並評估其效益。本研究採用準實驗研究法，將參與研究的國中一年級十二個班級，以隨機的方式將各班分配進入分別包含不同「遊戲評量設計模式」的網路教學環境進行學習，經過為期五週的教學後再對學習者實施總結性評量與 WGASS(Web-based Game-Assessment Strategies Scale)問卷。研究發現，國中 學生在本研究之不同「遊戲評量設計模式」下進行學習後，其學習效益有顯著的差異，且發現包含較多回饋策略的「遊戲評量設計模式」有較佳的效益。此外，本研究亦利用問卷調查法探討國中學生對網路化遊戲評量 GAM-WATA 與傳統紙筆測驗之感受情形。研究發現，在學生「對兩種測驗的測驗品質的感受」方面，都認為 GAM-WATA 網路測驗比傳統課室紙筆測驗的品質好，另外，學生對 GAM-WATA 網路評量都比傳統課室紙筆測驗有正向的態度。除此之外，亦發現學習者對於 GAM-WATA 之 Ask-Hint 策略-「消去法」與「Callin 法」均有正向的認同感，多數學生希望求救機會越多越好，整體而言，學習者在遭遇問題時會主動使用 Ask-Hint 策略來獲得提示，而個人對某題目的答對率、整份試卷的過關百分率會影響他們對 Ask-Hint 策略的使用態度。另外，學習者多認為 Ask-Hint 策略不但可以增進其與同儕間的互動與知識交流，並且可以讓他們獲得更多的學習，而且學習者還認為在以過關為前提之下，使用 Ask-Hint 策略的多寡亦是一種實力的象徵，使用次數越少，代表自己

的實力越好，此外，也發現不同「遊戲評量設計模式」下的學習者，其對於 Ask-Hint 策略的態度與其使用的時機也有差異。

關鍵字：WATA; GAM-WATA; Ask-Hint; 策略; 網路形成性評量; 網路教學

Abstract

This research aims to develop a web-based assessment system, naming the Web Assessment and Test Analysis system for High-school Science (WATAHiS). The WATA- HiS is to be redesigned and expanded from the GenBio-WATA, which was supported by National Science Council Project- NSC90-2511-S-018-015 and originally developed by our research group(Wang, T. H. & Huang, S. C, 2001) for university level of the General Biology Course. This new system will integrate the classic testing theory with the latest Internet database technology to develop a multifunctional Web-Based Test system (WBT), which is based on Triple-A Module (Assembling, Administrating, Appraising). In other words, the WATAHiS System will develop (1) Assembling engine for teachers to make a test (2) Administrating engine for students to take tests (3) Appraising engine for teachers to do test and item analysis. Besides, the WATA- HiS System will have a function to let teachers to do a formative assessment, which is based on an idea of self- actualization (or realization) form Moslow. The formative assessment of this research have developed two modules (named FAM-WATA and GAM-WATA modules) which have invited science teachers use in the junior high school this year. Results show that GAM-WATA strategy could help students learn better at web-based learning environment. In addition, participated students show positive attitudes toward GAM-WATA strategy.

Key words：Assessment; WATA(Web-based Assessment and Test Analysis System); Web-based learning; Biology