

職前中學化學教師之科學與化學概念探究--個案研究
The Investigation of Preservice Chemistry Teachers' Conceptions of
Science and Chemistry

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中文摘要

本研究的目的是以個案研究之方法研究一班職前化學教師對科學與化學的看法，以了解這些職前教師對於科學與化學的看法是否符合當前科學教育的潮流。由於科學教育的發展隨時代的不同與科學哲學的演進而有所改變，其目標由重視學科知識傳授，絕對客觀的科學方法，到現今注重科學是具有道德與倫理上價值判斷的科學，科學與科技和社會是密切的結合而不可分開的。職前化學教師是傳播科教方針的重要媒介，因此了解職前化學教師對科學與化學的看法將有助於科學教育學者體認一些現況，以做為改進未來科學教育師資培育課程之奠基石。本研究採質的研究法，利用開放式問卷與訪問收集資料。參與者為一班化學系學生（27名）。資料的分析採用開放式編碼的建立與不斷的歸納與比較，以建立類別。結果以主張（assertion）配合學生回答之方式呈現。研究結果顯示，職前化學教師對於科學的看法認為科學是一種知識，過程，且必須是客觀的，有系統的。對化學的看法皆認為是研究物質結構與變化的一門學問。兩種看法皆屬於傳統科學家或化學家眼中的科學——一門嚴謹的學問，而此種看法亦較偏向於過去的邏輯實證主義的觀點。本文建議在日後的職前理化教師教育中加強準化學教師對於科學與化學的看法著重科學是具有價值判斷的，科學不是獨立於生活之外的一門學科，它是與科技和社會密切配合的，換言之與生活息息相關。以便日後教學後，協助學生接納科學並應用科學於日常生活當中。

關鍵字：化學看法；科學看法；職前科學教師

Abstract

Preservice science teachers is one of the important factors to transmit current goals of science education to the pupils. Thus, understanding preservice secondary science teachers' conceptions of science will help science educators to have deep insight of science teachers' thoughts in order to improve future science education. The purpose of this study is to investigate preservice chemistry teachers' conceptions of science and chemistry. One class of preservice secondary chemistry teachers enrolled in one chemical teaching methods class at an educational university in Taiwan are enrolled in the study. Data resources include students' written responses and verbal responses of their conceptions of science and chemistry. Later, data are analyzed by deductive and analytic way. The findings are presented using assertions accompany with direct evidence. The findings of this study indicate that most of preservice secondary chemistry teachers view science and chemistry as a kind of knowledge and process. Their descriptions of these two concepts seem similar with scientists or chemists. In other words, science and chemistry are more like strict disciplines to these preservice teachers. The study suggests that science education should incorporate STS and constructivist views of science into their teacher education program, so that preservice teachers can related these views of science to their pupils.

Key words : Conceptions of chemistry; Conceptions of science; Preservice chemistry teachers