

以建模導向課程促進海洋永續觀點發展之初探

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摘要

永續發展教育是指為了人類社會的永續性發展而提供的各種教育內容、方式以及作為，多數學者認為永續是經濟、環境及社會三面向共存，並從這三面向取得平衡發展。由於海洋永續的概念複雜且超越學生一般生活經驗，因此，本研究使用建模教學協助學生了解海洋族群的消長，並體會人類與海洋生態之間所形成之動態關係，進而讓學生理解海洋永續概念以建立對於永續的價值判斷。研究對象為中部一所國中一年級的學生，共有 22 位學生。研究資料包括學生三次的概念圖以及海洋永續的試題。研究問題包含：一、在建模學習歷程中，學生對於海洋永續觀點展現情形；二、在建模學習前、後，學生對於海洋永續觀點的定義與價值判斷的改變情形。主要研究發現為：一、在教學活動後，從海洋永續的概念圖評量結果發現，學生在環境和經濟相關的觀點有顯著成長；二、學生對於海洋永續的定義，在教學後學生較能夠理解海洋永續發展概念，並能從經濟、環境及社會這三個面向思考，亦即學生能以較宏觀的視野定義海洋永續；三、建模教學活動後，學生在永續價值判斷上從對與錯的二分法判斷，提升從多個角度切入問題進行判斷。

關鍵字： 建模教學、海洋永續、概念圖

投稿日期：2018年04月02日；接受日期：2018年06月04日

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A Preliminary Study on the Views of Marine Sustainable Development with a Model-based Curriculum

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Abstract

Education for sustainable development refers to various educational contents, methods, and behaviors provided for the sustainable development of human society. Most scholars believed that sustainable development is the coexisting and balance of the three aspects, namely, economy, environment and society. Because the concept of sustainable marine management is complex and beyond the general life experience of students, this study uses a model-based curriculum to help students to understand the growth and decline of marine populations and to understand the dynamic relationship between human beings and marine ecology. The goal was to let students understand the concepts of sustainable marine and develop value judgements on sustainability. The research participants are 22 seventh-grade students from central Taiwan. The research questions include: (1) to understand how the students' views of sustainable marine progressed during the modeling learning process, and (2) to investigate the extent to which, the students' definitions and values of sustainable marine changed after participating in the curriculum. We reached the following conclusions. First, based on the results of the concept maps, the students' views of sustainable marine development improved in the environmental and economic aspects after the teaching. Second, after participating in the modeling curriculum, students' definitions of sustainable marine development were more comprehensive and the definitions

showed the three aspects of economy, environment and society. That is, students were able to define the marine environment in a broader perspective. Finally, the students' judgments of the value of sustainable development were broadened from the dichotomy between right and wrong to judging from multiple perspectives.

Keywords: model-based instruction, marine sustainability, concept map