

國科會計畫

計畫編號: NSC98-2514-S018-004-NE

研究期間: 9807-9905

能源國家型人才培育自由導向整合型計畫－低碳綠能創新課程開發與推廣  
Innovative Curriculum Design and Outreach of Low Carbon Dioxide, Green  
Energy

王瑋龍

中文摘要

在自然資源日漸枯竭的現今，環境保育成為全球共同關注的議題。教導孩子們正確的能源知識、態度、環境保護與評價之重要課程。為達成有效的運用能源、節約能源與減緩全球暖化問題，節能減碳非口號，低碳綠能是務實的做法，進一步要如何做，儼然成為教育的重要目標之一。本計畫以低碳綠能為課程主題，向下紮根，向上發展為主軸，強調以學生為學習中心且發展教師專業成長的計畫，由本校環境教育中心、綠色科技中心整合精誠中學、平和國小、彰化師大生物學系、工教系、化學系的專業人才，組織一個節能減碳課程研究發展中心，以大學教師與 K12(高中小)教師合作共同建立研究社群，向上發展以提升教師專業能力，將低碳綠能科學新知融入課程的教學改進；向下紮根實施新的課程，讓能源科技教育在 K12 生根發育，培育有競爭力的科技人才。透過評估機制修正改進教學的內涵，將低碳綠能融入教學課程以期課程順利發展。本計畫預計分三年進行，第一年深耕：學生基礎調查；種子教師培訓；教材開發；發表教學；培訓節能省碳教育志工。第二年紮根：全面自然與科技相關教師推廣；教材融入正常課程；多媒體教學：開發「綠能生態園區之電腦模擬軟體，建立能源與環境科技教學資源網站。第三年推廣：舉辦替代性能源體驗活動，節能省碳科學小論文研習營，發展可攜式節能省碳教具，推廣舉節能省碳教育；科技新知研討會，將課程內容修改為符合跨領域之科普教育程度。

## Abstract

With the natural resources is running out gradually today, environmental conservation has become a global concern issue. It is increasing become an essential program for teaching children the correct energy knowledge, attitude, environmental protection and evaluation. In order to use energy more effectively, conserving energy, and also lessening the global warming problems, we are not only encouraged to reduce carbon dioxide production and carry out green energy & low carbon dioxide policy, but also have to further make it one of the primary objectives for educations. This project focused on the subject of low carbon dioxide and green energy. With perching on downward extension and upward development, this project emphasizes student-centered learning and develops a program for teacher professionalism. Meanwhile, the Environment Education Center and Green Technology Center of National Changhua University of Education teamed up with Ching Cheng High School, Ping He Elementary School, and the Department of Biology, Industrial Education and Technology, and Chemistry of National Changhua University of Education organizing a research and development center for conserving energy and reducing carbon dioxide. Our goals are to recruit university faculty and teachers from K12 levels (elementary, junior, and high school) together to form a research community, hoping to promote teachers' professional knowledge and imbue the new knowledge of low carbon dioxide & green technology into curriculum for teaching improvement. The downward extensions are going to carry out with new programs, aiming that can be rooted and being development in K12 levels and nurtures the competitive technological human resources for the future. We will also improve our teaching intensions through evaluation modification, integrating low carbon dioxide & green energy with school curriculum to make our programs workable and developable. There is a three-year project, the first year is downward extension job, including the fundamental inquiry for student, a seeded teacher's training program, teaching material development, teaching presentation, and volunteer workers training. The second year is rooting job. We carry out works such as a full scale natural and technological teacher development, materials included in the normal curriculum, teaching with multimedia. It is our hope that a computer simulation software can be developed for green energy park and construct an web site of teaching resource for energy and environment technology as well. Finally, we use the third year of the program for promotion. In this period, our activities include holding an experiencing the alternate energy event, building a learning camp for producing scientific papers of reducing carbon dioxide, developing portable energy conserving and carbon dioxide reducing teaching aids, promoting energy saving and carbon dioxide reducing education, and holding new technology workshops. Our ultimate goals are that the modifying of the curriculum to be accepted by inter-discipline popular science educations.