

從在地邁向國際：連結健康、閱讀與三語力之多元食農創新教學研究

一、摘要

(一) 研究概述

本研究以「食農教育 ABC 模式」為架構，透過行動研究發展校本課程。焦點在於連結美濃在地農業、健康促進、閱讀及客華英教學，建構具本土特色與國際視野之教育模組。

(二) 研究目的

本研究旨在：深化校本課程地圖：以美濃六大經濟作物（如白玉蘿蔔、野蓮、147 米等）為核心，依時序建構系統化的食農課程模組。鏈結健康促進與惜食：引導學生透過「做中學」認識營養需求與國產食材，養成均衡飲食習慣，並經由科學探究（如廚餘紀錄）建立減碳惜食觀念。創新「閱讀食材」素養：將食農教育延伸至語文領域，從在地飲食文學中探究「晴耕雨讀」的人文底蘊，提升學生對鄉土文化的認知深度。轉化本土特色為全球競爭：結合 AI 智慧監控與太陽能魚菜共生科技，並實施「客、華、英」三語沉浸式教學，使學生能以國際語言分享在地農業創新成果與 SDGs 實踐。

(三) 研究方法與實施

本研究採用參與式行動研究 (Participatory Action Research, PAR)，自 110 至 113 學年度持續進行四個循環階段。**研究參與者**：以 NL（化名）國中全校師生為核心，並延伸至社區農民與國際交流對象。**跨領域教學設計**：成立由國文、自然、家政、科技與英語教師組成之專業社群，辦理跨領域共備，將食農議題融入部定及校訂課程。**場域與資源整合**：營造太陽能魚菜共生智慧農場與耕讀文化戶外教室，並與美濃農會、青農等外部組織建立策略聯盟。**評量工具**：包含健康飲食行為問卷、學生學習筆記、三語發表成品、以及「美食剩宴」零廢棄全食菜單設計表現評量。

(四) 結果與討論

本研究發現：1.在地創新的跨域實踐：研究發現食農教育能有效連結健康促

進。學生在參與「從產地到低碳餐盤」的過程中，顯著提升了對在地產銷履歷食材（如野蓮、147 米）的認同與攝取意願，校園剩食量亦隨之下降。2.閱讀與文化底蘊的內化：透過閱讀飲食文學與實地田野觀察，學生對客家「耕讀」精神有了更深刻的同理，成功將傳統農耕觀念轉化為現代的人文素養與生活知能。3.本土語言與國際視野的交匯：研究證實三語沉浸式教學能強化學習成效。學生不僅能用客語敘說家鄉農事，更能運用英語及數位載具（如雲端攝影、IoT 監測數據）向國外交流對象（如美國、亞洲交流計畫）分享台灣農業科技與永續議題，展現高度的文化自信。4.智慧教育引導永續轉型：導入 AI 監控科技讓傳統農業轉型為現代科技教育，激發學生的創新思維，使其能從全球視野（如氣候變遷影響）出發，探討地方農業的存續與韌性。

本研究顯示，當食農教育不再僅限於農事操作，而是與健康、閱讀及國際溝通深度結合時，能成為偏鄉教育創新的重要引擎。這種「由內而外」的本土實證，正能回應大會對於「跨文化交流」與「在地創新轉化為全球視野」的期待。

關鍵字：食農教育、在地創新、健康促進、閱讀教育、國際教育

From native soil to the world's wide stage: A Study on Multi-dimensional Agri-food Education Innovation Integrating Health, Reading, and Trilingual Learning

1. Research Overview

This action research develops a cross-disciplinary school-based curriculum at a rural junior high school. By integrating local agriculture with health promotion, reading literacy, and trilingual (Hakka, Mandarin, English) instruction, the study aligns local innovations with Sustainable Development Goals (SDGs) to foster global citizenship and cultural confidence.

2. Research Purpose

In an era of globalization and digital transformation, education must trigger student motivation by addressing real-world problems. This study aims to:

2-1 Systematize School-based Curriculum Maps: Using six local economic crops (e.g., White Jade Radish, Wild Lotus, 147 Rice) as cores to build seasonal modules that ensure the sustainability of the program.

2-2 Bridge Health Promotion and Sustainable Behavior: Guide students to understand nutritional needs and domestic food sources through "learning by doing," fostering balanced diets and establishing zero-waste habits through scientific inquiry.

2-3 Innovate "Food Reading" Literacy: Extend agri-food education into the humanities by exploring the cultural depth of "farming and reading" (晴耕雨讀) through local literature, enhancing students' empathy for their heritage.

2-4 Transform Local Features into Global Competitiveness: Combine AI smart monitoring and solar-powered aquaponics with "Hakka-Mandarin-English" immersion, enabling students to share local agricultural innovations and SDG practices in international languages.

3. Research Methodology

This study utilized an **Action Research** methodology across four cycles from the 110 to 113 academic years.

3-1 Participants: The core subjects were the entire student body and faculty of Nanlong Junior High School, extending to local farmers and international exchange partners.

3-2 Cross-disciplinary Design: A Professional Learning Community (PLC) was established involving teachers from Language, Science, Home Economics, Technology, and English departments to conduct cross-domain co-preparation and integrate agri-food issues into the curriculum.

3-3 Field and Resource Integration: The school created a solar-powered aquaponics smart farm and a cultural outdoor classroom while forming strategic alliances with the local Farmers' Association and young farmers.

3-4 Assessment Tools: Included health behavior questionnaires, learning logs, trilingual presentation outputs, and performance evaluations of "Zero-Waste" menu designs.

4. Results and Discussion

4-1 Cross-domain Practice of Local Innovation: The research found that agri-food education effectively links to health promotion. Students who participated in the "farm-to-table" process showed significantly increased recognition and intake of local traceable ingredients, leading to a marked decrease in campus food waste.

4-2 Internalization of Reading and Cultural Heritage: Through food literature and field observations, students developed a deeper empathy for the Hakka spirit of "farming and reading," successfully transforming traditional farming concepts into modern humanistic literacy and life

skills.

4-3 Convergence of Indigenous Language and Global Vision: Trilingual immersion enhanced learning outcomes. Students were not only able to narrate local farming stories in Hakka but also utilized English and digital tools (e.g., IoT data, cloud photography) to share Taiwan's agricultural technology with international peers (e.g., USA exchange programs), demonstrating high cultural confidence.

4-4 Smart Education Leading Sustainable Transformation: Introducing AI monitoring transformed traditional agriculture into modern technology education. This inspired innovative thinking, allowing students to explore the resilience of local agriculture from a global perspective, such as the impacts of climate change.

This study demonstrates that when agri-food education extends beyond manual labor and integrates with health, reading, and international communication, it becomes a powerful engine for innovation in rural education. This evidence-based "inside-out" approach directly responds to the conference's call for "Bridging Cultures" and "Co-creating Knowledge," showing how local innovation can be translated into global educational insights.

Keywords: agri-food education, local innovation, health promotion, reading education, international education