

編輯的話

國立臺中教育大學教育學系發行《教育理論與實踐學刊》，謝謝多年來編輯委員的付出與投稿者的貢獻，讓本學刊得以持續為我國教育學術領域奉獻心力。本期由投稿的文章中，經過嚴格的雙審制、編輯會議之討論以及作者反覆細心修訂，並在責任編輯的謹慎檢核後，決議刊登三篇文章。內容涵蓋跨領域學習、線上教學、以及混齡教學之探究，希冀提供在疫情下最新的教育實踐有效策略。

第一篇為張媛甯教授撰寫的〈運用問題導向學習於跨領域學習課程之教學實踐研究〉，該研究針對修習「金融市場與商品設計」課程的大三學生，透過量化問卷以及質性資料蒐集，探究問題導向學習（PBL）融入跨領域學習課程對學生學習成果之影響。結果發現學生在不同層面學習上皆有所提升，同時激發學生學習動機與態度，並在促進自主學習、溝通協調、人際關係、團隊合作等核心素養上也有所精進。該結果對於大學教授提昇教學品質，具有實踐意義。

第二篇為劉唯玉教授、鄒銘哲先生、陳美瑩女士所撰寫的〈線上教學師生互動初探-社會臨場感觀點〉，該論文在全球新冠肺炎疫情爆發的脈絡下，探究師生互動在線上教學中的實踐。研究中蒐集 Google Meet 線上教學錄影、學生課後回饋，以及社會臨場感量表等資料，發現數項重要的線上教學師生互動的策略。對於未來因應疫情變化的教育現場，具有參考價值。

第三篇則為林佳慧助理教授、鄭章華助理教授撰寫之〈偏鄉小學教師實施數學混齡教學之個案研究〉，該研究旨在探討在數學科的知識結構下，進行混齡教學的困難及策略。研究針對課程轉化方面、教學實施方面、以及行政配套方面，提出了具體的描述及建議。對於未來師資培育及教師專業發展，提出了具啟示性的重要觀點。

本期得以順利出刊，首先感謝敬業的諸位審稿者提供專業的審查意見，其次要感謝諸位編輯委員、三位責任編輯不辭辛勞的協助與參與會議，以及感謝本期作者們針對審查委員之專業建議細心修改，且肯定執行編輯與編輯助理辛勤的連絡與支援。期望諸位教育先進繼續給予本刊指教，與鼓勵更多有志者投稿本刊，讓本刊得以持續為教育領域之發展提供微薄貢獻之力。

教育理論與實踐學刊總編輯 陳延興 謹誌

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運用問題導向學習於跨領域學習課程之 教學實踐研究

張媛甯

摘要

本研究探討問題導向學習 (PBL) 融入跨領域學習課程的教學實踐歷程，以了解教學策略的適合性及對學生學習的影響。本研究採取個案研究法，研究對象來自不同學院修習「金融市場與商品設計」課程的 58 位日間部大三學生，藉由授課教師的課堂觀察與省思札記、學生學習回饋等質性資料蒐集，並透過量化問卷前後測調查比較學生在實施 PBL 前後的經驗與感受之差異，探討 PBL 的教學實踐歷程及其對學生學習成果之影響。研究發現，學生在「學習動機與態度」、「同儕互動與合作」、「學習目標與內容」和「教學設計與策略」四層面前後測問卷中均呈現顯著差異；質性資料也顯示，將 PBL 融入跨領域學習課程的教學實踐歷程，能有效提升學生對課程內容的了解及培養其問題解決的能力，並激發學生學習動機與態度而促進自主學習，以及提升跨領域學習者應具備的溝通協調、人際關係、團隊合作等核心素養，而教師在教學實踐過程中亦透過課堂觀察與學生回饋持續進行教學反思以精進教學。

關鍵詞：跨領域學習、問題導向學習、教學實踐研究

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The Teaching Practice Research on Applying Problem-Based Learning in the Interdisciplinary Learning Courses

CHANG, Yuan-Ning

Abstract

The purpose of this study applied the PBL into teaching practice in order to understand the process of teaching practice, and its influences on student learning. A case study was conducted on 58 students who came from different colleges and enrolled in “Financial Market and Commodity Design” course. Employing questionnaires to compare differences of the viewpoints of undergraduate students before and after the implementation of the PBL, and collecting researcher's observation, reflection notes, and student learning feedbacks, this study explored the process of the teaching practice and the impact of the PBL on students' learning outcomes. The following conclusions were revealed that students showed significant differences in all four dimensions including learning motivation and attitude, peer interaction and cooperation, learning objectives and contents, and teaching design and strategy. According to qualitative data, applying the PBL in the course could effectively improve students' understanding of course content and cultivate their problem-solving skills, and also stimulate students' learning motivation and attitudes to promote their self-directed learning, and enhanced the core competencies including communication and coordination, interpersonal relationships, teamwork that interdisciplinary learners should have. Moreover, teachers continuously reflected on teaching through classroom observation and student feedback to enhance teaching quality.

Keywords: interdisciplinary learning, problem-based learning (PBL), teaching practice research

線上教學師生互動初探—社會臨場感觀點

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摘要

2020年全球新冠肺炎疫情爆發，第一研究者關切如何在線上教學融入師生互動，以兩班學生共 106 位學生為研究對象，各實施兩節課 100 分鐘的教學原理課程，並以社會臨場感觀點探討線上教學師生互動情形。本研究蒐集 Google Meet 線上教學錄影、學生課後回饋，以及社會臨場感量表等資料進行分析。研究發現：一、教學者在線上教學，最常使用的情意／情感、凝聚力性和互動性指標項目，分別是自我揭露與價值觀表現、稱謂與談論小組，以及詢問問題。二、在同步線上教學環境中，教師與學生皆可相互揭露自我，有利於建立、鞏固師生間的親密關係和信任感。三、詢問問題是線上教學過程中教師與學生建立且維持互動的主要方式。四、教學者使用自我揭露與價值觀表現、稱謂與談論小組，以及詢問問題等社會臨場感三類指標項目之教學策略，能讓學生在線上教學留言互動與討論感到自在，並能促進討論。

關鍵詞：線上教學、師生互動、社會臨場感

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A Preliminary Study on the Teacher-student Interactions in Online Teaching - Social Presence Perspective

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Abstract

At the beginning of 2020, COVID-19 broke out, many countries announced the suspension of classes, and encouraged teachers to teach students online. As a teacher trainer, the first author had made early preventive measures in response to the suspension of classes that may be encountered at any time due to COVID -19 epidemic in Taiwan, and had taught two classes of students who took “Principles of Instruction” by Google Meet online teaching in April 2020. Researchers concerned about how to integrate teacher-student interaction rather than one-way teaching in online teaching, therefore, this study was intended to explore the teacher-student interaction in online teaching from the perspective of social presence. The research subjects were 106 students who took the first author’s class in the second semester of the 108 academic year and agreed to participate in the research. We collected material such as online teaching videos of Google Meet, student feedback after classes and social presence scale to analyze. The results showed that 1.The most commonly used affective, cohesive, and interactive indicators by the teacher in online teaching process are self-disclosure & values, vocatives & group references, and asking questions. 2.In the synchronous online teaching environment, the teacher and students can disclose themselves to each other, which can establish and consolidate the close relationship and sense of trust. 3.Asking questions was the main way for the teacher and students to establish and maintain interaction. 4.The teacher used teaching strategies of three social presence indicators which can make students feel comfortable in the messaging interaction and discussion in Google Meet online teaching, and promote discussion. It helped teachers and students to interact and enhance the quality of teaching.

Keywords: online teaching, teacher-student interactions, social presence

偏鄉小學教師實施數學混齡教學之 個案研究

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摘要

近年來愈來愈多偏鄉小校因少子女化實施混齡教學，大多數聚焦於知識結構性不強的科目。僅有少數學校於知識結構性強的科目（例如：數學）實施混齡教學，這方面的研究仍在起步。基於此，本研究以兩所偏鄉小型國民小學為案例，探討個案教師實施數學混齡教學時，在課程轉化、教學實施與相關行政配套所遭遇的挑戰及其帶來之相關啟示。資料蒐集包括訪談逐字稿、觀察紀錄、教案與學習單與研究日誌等，並以持續比較與歸納方式進行分析。研究發現：一、在課程轉化方面，循環課程最為困難，耗費教師最多的時間與精力為不同學習準備度的學生設計教材和題目；二、在教學實施方面，教師不易因應學生差異設定學習目標，以及運用小組合作學習發揮混齡教學優勢；三、在行政配套方面，教育行政支持與校長課程領導有助於教師實施混齡教學，然而教師增能卻未能對準混齡教學的需求；四、值得注意的是，循環課程轉化雖最具挑戰性，卻是促成教師關注學習差異與教學改變的利基。綜上，本研究針對教師專業發展以及師資培育課程規劃提出建議，期能對國內推動混齡教學有所助益。

關鍵詞：混齡教學、跨年級教學、偏鄉教育

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Challenges and Implications of Conducting Multi-grade Teaching in Mathematics: A Case Study on Two Elementary Schools in a Remote Area

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Abstract

More and more elementary schools in remote areas conduct multi-grade teaching (MT) to address the issues of low birth rates. Most of the schools implement MT in subjects with a weak structure of knowledge. Only a few schools conduct MT with a strong structure of knowledge, such as mathematics. Research on MT in mathematics is burgeoning. Thus, this case study explored the implementation of MT in mathematics in two schools in a remote area to learn the challenges, opportunities, and implications. Data collections included lesson observations, lesson plans, worksheets, interview transcripts, and fieldnotes. The researcher applied constant comparison and inductive analysis to analyze the collected data. Research findings suggest that, firstly, the vital challenges of MT occurred in the design and implementation of the cyclic math curriculum to meet students with varied learning readiness. Secondly, the teachers did not set up differentiated learning goals and did not take advantage of multi-grade collaborative learning. Thirdly, the teachers' teaching benefited from the local education bureau's and the school administrations' supports; however, the teacher workshops conducted by the educational administrations did not benefit multi-grade teaching. Last but not least, although the cyclic math curriculum is a significant difficulty and burden for the case teachers, it is the opportunity for promoting case teachers' Differentiated Instruction. This study provides suggestions for in-service teachers' professional development and pre-service teachers' program design.

Keywords: mixed-age teaching, multi-grade teaching, rural education