陳佩英

高中數位轉型網絡的部署行動初探

Preliminary Exploration of Deployment Actions for High School Digital Transformation Networks

國立屏東大學民生校區

精進×特色×師培USR
師資培育的關鍵驅動力

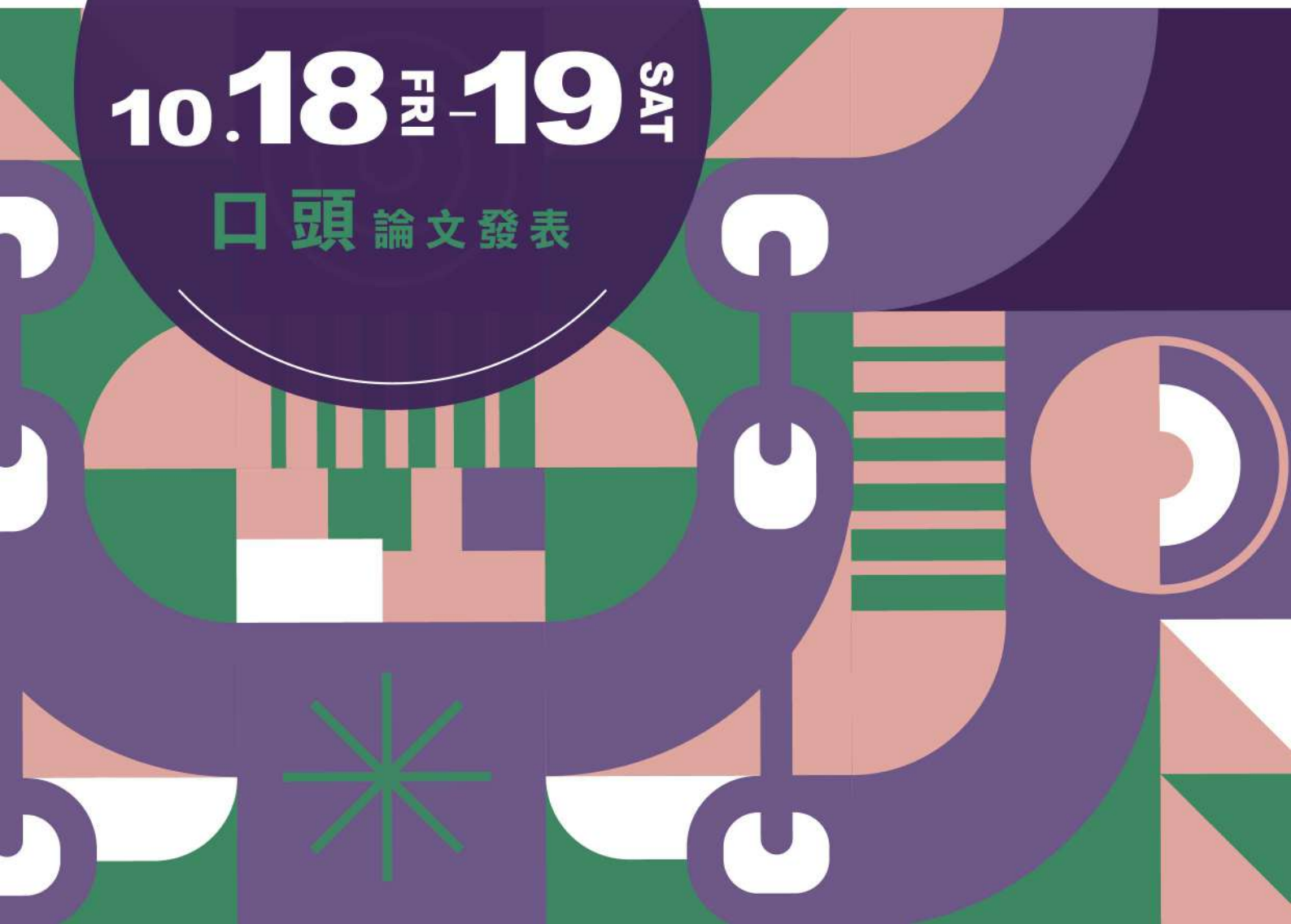
Key Drivers of Teacher Education:
Enhancement x Distinctiveness x Teacher Education USR

專題演講－圓桌論壇
EIT TALK－工作坊

The 12th International
Conference on Teacher Education

10.18 FRI – 19 SAT

口頭論文發表



發表人：陳佩英

高中數位轉型網絡的部署行動初探

摘要

高中學校近年來面臨多層面衝擊，包括 108 課綱、新冠疫情、和 2023 年生成式人工智慧的急速發展等，加速學校變革與數位科技在教育現場的應用。本研究聚焦於高中課綱前導學校的聯合行動，探究高中前導學校的網路策進行動如何產生橫向與縱向的聯結，彰顯既分散於又能聚合的效用。研究問題包括如何透過前導學校網路運作架構，有效推動高中學校的數位轉型。

本研究將前導學校網絡視為「參與者治理網絡」和「網絡掮客」的結合。一方面，各校自行運轉但又能結為聯盟，在總計畫團隊帶領與支持下，發展共同框架但又能依據各校條件，彈性發展可行的路徑。

負責前導學校計畫的團隊，針對前導學校進行既分工又能聯合的數位轉的系統性規劃，主要的聯合行動包含：

- 轉型混成學習 (α1): 透過整合性領導，從混成學習轉進數位整體轉型。
- 跨校遠距共授 (α2): 透過跨校遠距共授課程，促進校際課程資源共享。
- 互動教學與實時回饋 (β1): 善用同步、非同步學習資源，發展多種差異化學習模式。
- AI 優化課程設計 (β2): 培訓數位種子教師，學會使用 AI 設計教學流程，學習活動與評量。
- 差異化教學適性補強 (β3): 著重在跨校數位重補修教材和教法之開發，改善重補修之數位應用作法。

- 開發原創數位教材 (β4): 開發與充實原創影音數位教材。

- 匯總學習資源入口網 (β5): 提供教師與學生入口網站架構與功能，強化教育資源取得。

- 建構數位科技行動知識 (β6): 透過行動研究探究數位科技應用的實際問題，提出問題解決的方法。

本研究為前導學校計畫團隊的行動研究，透過參與式觀察、分析、持續性的反思，調整網絡行動策略以改善前導學校行動方案。研究發現指出，創制行動始於組織策略小組，負責策劃、部署、和指引數位轉型行動。計畫團隊包括學校領導、教師、以及專家學者，透過集思廣益，凝聚共識，協同合作，策進數位轉型行動。部署的行動先從「轉型混成學習」和「跨校遠距共授」兩個核心目標行動開始，再逐步深耕行政管理智慧化、教與學數位化、與數位化社群的階段性數位轉型關鍵行動。

前導學校網絡數位轉型的部署行動，其聚合效用可從信任密度、網絡行動者數量、共識程度、和網絡層級的行動能力來呈現。較理想的參與者治理網絡，是成員間的信任密度高、小組共識程度高、網絡層級所需的統合成本較低。而整個前導學校網絡行動者因校數多，網絡成員間的信任密度中等程度、成員數量與共識有一定基礎下，那麼連結網絡行動者、和組織動員的能力便顯得得特別重要，也是網絡行動組織的特性（Provan & Kenis, 2008）。

關鍵詞：數位轉型、網絡行動、聚合

參考書目：

教育部（2023）。十二年國民基本教育課程綱要前導學校輔導工作計畫。

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of public administration research and theory, 18*(2), 229-252.

Preliminary Exploration of Deployment Actions for High School Digital Transformation Networks

Pei-Ying Chen

Department of Education, National Taiwan Normal University

Abstract

High schools in recent years have faced multifaceted challenges, including the implementation of the 108 Curriculum Guidelines, the COVID-19 pandemic, and the rapid advancement of generative artificial intelligence in 2023, accelerating school transformation and the use of digital technology in education. This study focuses on the joint actions of high school curriculum pilot schools, investigating how network initiatives at pilot schools create horizontal and vertical connections, highlighting their decentralized yet cohesive efficacy. The research questions include how to effectively promote digital transformation in high schools through the operational framework of the pilot school network.

This study views the pilot school network as a combination of “participant-governed networks” and "network brokers." On the one hand, schools operate independently while forming alliances, guided and supported by the overall program team to develop a common framework while flexibly developing feasible pathways based on individual school conditions.

The team responsible for the pilot school program systematically planned for digital transformation, both independently and collaboratively, for pilot schools. The primary joint actions include:

- **Transformation of Blended Learning (α1):** Through integrative leadership, transitioning from blended learning to a comprehensive digital transformation.

- **Cross-School Co-Teaching (α2):** Facilitating inter-school sharing of curriculum resources through cross-school distance co-teaching.

- **Interactive Teaching and Real-time Feedback (β1):** Utilizing synchronous and asynchronous learning resources to develop a variety of differentiated learning models.

- **AI-Enhanced Curriculum Design (β2):** Training digital seed teachers to learn how to use AI in designing teaching processes, learning activities, and assessments.

- **Differentiated Instruction for Adaptive Remediation (β3):** Focusing on developing cross-school digital remediation materials and teaching methods to improve digital application practices for remediation.

- **Developing Digital Teaching Materials (β4):** Developing and enriching original audio-visual digital teaching materials.

- **Compiling a Learning Resource Portal (β5):** Providing teachers and students with portal structure and functionality to enhance access to educational resources.

- **Building Digital Technology Action Knowledge (β6):** Conducting action research to explore practical problems in the application of digital technology and proposing solutions.

This study is an action research project for the pilot school program team, involving participatory observation, analysis, and continuous reflection to adjust network action strategies to improve pilot school action plans. The findings indicate that generative action originates from the organizational strategy group, responsible for planning, deploying, and guiding digital transformation actions. The program team, including school leaders, teachers, and experts, collaborates through brainstorming, consensus building, and collaborative efforts to advance digital transformation actions. Deployment actions begin with the two core target actions of "blended learning transformation" and "cross-school distance co-teaching," followed by the gradual cultivation of key digital transformation actions, such as the digitization of

administrative management, digitalization of teaching and learning, and the formation of a digitalized community of teachers.

The deployment actions of digital transformation in the pilot school network, and their collective efficacy, can be seen in terms of trust density, the number of network actors, the degree of consensus, and the action capacity at the network level. Ideally, participant-governed networks have high trust density among members, high group consensus, and low integration costs at the network level. With the high number of schools involved, and thus a moderate level of trust density, a certain level of consensus, and a sizable number of network members, the ability to connect network actors and mobilize the organization becomes particularly important, characteristic of network action organizations (Provan & Kenis, 2008).

References

Ministry of Education (2023). Pilot School Guidance Program for the Twelve-Year Basic Education Curriculum Framework.

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. Journal of public administration research and theory, 18(2), 229-252.