

# **An Investigation of the Instructional Process in Integrating Programming into Early Childhood Teacher Education**

**Weigh-Jen Chen**

With the development and advancement of artificial intelligence, preparing university students with programming skills has become an important educational policy. Thus, integrating programming skills into the professional curriculum in every department has become a direction of school development in researcher's university. Based on this direction, the researcher has decided to integrate programming into the course of art education for young children, which is an advanced course for pre-service early childhood teachers. The objective of this course is to not only help these pre-service early childhood teachers acquire domain knowledge, but also arouse their interests in learning programming. It is hoped that this experience of the inter-disciplinary learning could be transformed into ideas for innovative teaching in the professional field. The design thinking approach was used as the conceptual framework of this research. The instructional pedagogies included a five-stage design thinking model proposed by Stanford d. school, a four-D-stage process of design thinking proposed by the UK Design Council, and a three-C-space approach for the exploring process of design thinking proposed by Tim Brown. From the young children's drawing of the interactive project, student's characteristics of being a design thinker, such as insight, observation, empathy, integrative thinking, optimism, experimentalism, collaboration skills, were observed. In addition, ADDIE instructional model was used to adjust the course structure, teaching materials, classroom management, and assessment of learning in order to increase learning effectiveness and to improve instructional quality.

Keywords: programming, design thinking, interdisciplinary learning, ADDIE instructional model, teacher education

專論

Weigh-Jen Chen, Associate Professor, Department of Early Childhood Education,  
National Pingtung University

---

Corresponding Author: Weigh-Jen Chen, email: [wchen@mail.nptu.edu.tw](mailto:wchen@mail.nptu.edu.tw)