Research on the Collaborative Enhancement Strategy of AI-TPACK for University Teachers from the Perspective of Artificial Intelligence

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Abstract

As artificial intelligence increasingly permeates education, it is crucial to understand teachers' views and interactions with these technologies. TPACK (Technological Pedagogical Content Knowledge) is a theory developed by American scholars Koehler and Mishra based on Lee Shulman's integrated knowledge framework (PCK). AI-TPACK, has developed from Subject Teaching Knowledge (PCK) and the integrated technology of Subject Teaching Knowledge (TPACK).

The AI-TPACK ability of university teachers is the knowledge structure that should be acquired and enhanced during the knowledge acquisition stage. This research investigated 300 university teachers from three regions, namely Guangdong, Hong Kong and Macao. Through methods such as questionnaire survey, teacher interviews and classroom observation, the following three questions were answered:

1. What is the current status of AI-TPACK capabilities of university teachers in the three regions?
2. What are the main factors influencing the improvement of AI-TPACK capabilities of university teachers in the three regions?
3. What effective strategies can be adopted to collaboratively enhance the AI-TPACK capabilities of university teachers in the three regions?

The research utilized SPSS and NVivo to comprehensively assess the ability of university teachers in the three regions to integrate artificial intelligence technology in their teaching practices. Research has found that there is a strong positive correlation between traditional TPACK and the various components of AI-TPACK. Region, gender and previous AI experience have a significant impact on AI-TPACK skills. The research proposes collaborative improvement strategies from five aspects: AI-TK (intelligent technology knowledge), AI-TPK (intelligent teaching knowledge), AI-TCK (intelligent content knowledge), AI-TPACK (intelligent comprehensive knowledge), and Ethics (Ethics), with the expectation of promoting the continuous optimization of the AI-TPACK capabilities of university teachers. So as to effectively integrate artificial intelligence into the classroom.