

Paper Title (文章標題)	Analysis of Factors Affecting Elementary School Teachers' Implementation of AI Education
Research Overview (研究概述)	This study investigated factors influencing elementary school teachers' AI implementation in education based on UTAUT. Data from 580 teachers were analyzed using R and Mplus. Results showed that AI-TPACK, intention to use AI, performance expectancy, AI teacher efficacy, perceived trust in AI, and facilitating conditions significantly influenced actual AI use.
Abstract (摘要)	The increasing policy emphasis on the use of artificial intelligence (AI) in education has led to growing attention to teachers' perceptions and implementation of AI in educational settings. The application of new technologies in classroom instruction requires teachers to overcome multiple barriers. Although previous studies have examined factors influencing teachers' perceptions and intentions regarding AI use in K-12 contexts, studies focusing on teachers' actual use of AI in classroom practice remain limited. The purpose of this study was to explore the factors influencing elementary school teachers' implementation of AI in education and to analyze the structural relationships among these factors. To achieve this purpose, related studies were reviewed to identify major variables affecting teachers' implementation of AI in education, and teachers' AI use was examined based on the Unified Theory of Acceptance and Use of Technology (UTAUT). Specifically, effort expectancy, performance expectancy, social influence, facilitating conditions, and AI-TPACK were established as major variables. In addition, teachers' educational beliefs, AI teacher efficacy, and perceived trust in AI were included to examine the structural relationships between elementary school teachers' intention to use AI and their actual use of AI while considering moderating and mediating effects. An online survey using Google Forms was conducted with elementary school teachers across South Korea for seven days, from January 23 to January 29, 2026. A total of 580 responses were collected. Data analysis was conducted using the R 4.4.2 program for frequency analysis, descriptive statistics, and reliability analysis. Subsequently, Mplus 9.1 was used to conduct correlation analysis, exploratory factor analysis, and confirmatory factor analysis in order to verify the Model fit of the measurement model. In addition, based on the proposed structural model, the effects and statistical significance of each variable were examined, and mediation effects were analyzed using bootstrapping procedures. The results of the hierarchical regression analysis indicated that the explanatory power of the model significantly increased as effort expectancy, performance expectancy, social influence, facilitating conditions, AI-TPACK, teacher-related variables, and intention to use AI were sequentially added to the model while controlling for demographic variables. The final model showed a relatively high level of explanatory power ($\text{Adjusted } R^2 = .685$). In particular, AI-TPACK ($\beta = .281$), intention to use AI ($\beta = .234$), performance expectancy ($\beta = .167$), AI teacher efficacy ($\beta = .100$), perceived trust in AI ($\beta = .087$), facilitating conditions ($\beta = .081$), and experience in AI learning communities ($\beta = .076$) were found to have significant positive effects on elementary school teachers' actual use of AI. This study is meaningful in that it explored elementary school teachers' intention to use AI and actual use of artificial intelligence (AI) based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and attempted a theoretical extension by including variables reflecting teacher characteristics, such as AI technological pedagogical content knowledge and teachers' subjective perceptions. Furthermore, by examining the factors influencing teachers' intention to use AI and their actual use of AI within instructional contexts, this study provides theoretical implications regarding the need for teacher training programs and instructional support environments to support teachers' professional development. The findings of this study may also serve as foundational data for establishing policies to support AI integration in elementary school settings.
Keywords (關鍵字)	Elementary School Teachers, Implementation of AI Education, UTAUT, AI-TPACK