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ARTIFICIAL INTELLIGENCE AND DIGITAL PEDAGOGY IN CONTINUOUS TEACHER PROFESSIONAL DEVELOPMENT: LESSONS FROM THE REPUBLIC OF KOREA FOR UZBEKISTAN

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Abstract. The rapid advancement of artificial intelligence (AI) and digital technologies has fundamentally transformed educational systems worldwide, creating new requirements for teachers' professional competencies. Continuous professional development (CPD) has become a strategic mechanism for equipping educators with digital pedagogical skills necessary for effective teaching in technology-rich learning environments. This paper examines the experience of the Republic of Korea in integrating AI and digital pedagogy into teacher professional development and explores its implications for educational reform in Uzbekistan. Based on comparative analysis, the study identifies key institutional practices implemented by Korea's National Education Training Institute (NETI) and regional teacher training centers. The findings demonstrate that AI-supported professional development significantly enhances teachers' digital competence, instructional innovation, and evidence-based educational decision-making. Practical recommendations are proposed for adapting Korea's successful experience to Uzbekistan's teacher professional development system.

Keywords: artificial intelligence, digital pedagogy, teacher professional development, educational innovation, digital competence, lifelong learning, Korea, Uzbekistan.

Artificial intelligence has become one of the most influential technological drivers of educational transformation in the twenty-first century. Educational institutions are increasingly adopting AI-powered technologies to personalize learning, automate assessment,

improve instructional design, and support evidence-based educational management. Consequently, teachers are expected not only to master subject knowledge but also to effectively integrate intelligent technologies into classroom practice.

The success of digital transformation depends largely on teachers' professional competence. International organizations such as UNESCO and OECD emphasize that continuous professional development should focus on developing digital literacy, innovative pedagogical approaches, and technological competence to prepare teachers for future educational challenges. Therefore, many developed countries have fundamentally redesigned their teacher training systems around AI-supported professional learning.

Among these countries, the Republic of Korea represents one of the most successful models. Through the coordinated activities of the National Education Training Institute (NETI) and regional professional development institutions, Korea has established a comprehensive system that integrates artificial intelligence, digital pedagogy, Smart Classroom technologies, and personalized teacher learning pathways into continuous professional development.

For Uzbekistan, which is actively implementing digital transformation within its education system, Korea's experience offers valuable methodological and organizational solutions for improving teacher professional development.

Artificial Intelligence as a Driver of Professional Development

Artificial intelligence has transformed teacher professional development from traditional knowledge transmission into personalized competency development. Korean professional development programs increasingly utilize AI-supported digital platforms that monitor teachers' learning progress, recommend individualized learning modules, and provide continuous formative feedback.

Unlike conventional in-service training, AI-supported professional development enables teachers to receive learning experiences corresponding to their existing competencies and

professional needs. Learning analytics identify knowledge gaps, while adaptive learning systems automatically generate personalized recommendations.

Furthermore, AI contributes to instructional planning by supporting lesson design, classroom assessment, content generation, and student performance analysis. Korean teachers receive specialized training enabling them to integrate AI applications into mathematics, science, language education, and interdisciplinary STEAM instruction.

Digital Pedagogy in Korea's Professional Development System

Digital pedagogy represents a central component of Korea's teacher education policy. NETI has introduced specialized professional development programs focusing on:

- AI-based instructional design;
- Smart Classroom implementation;
- Digital assessment;
- Educational data analytics;
- EdTech integration;
- Digital textbook utilization;
- AI ethics in education.

These programs emphasize practical implementation rather than theoretical knowledge. Teachers participate in project-based learning, collaborative lesson design, classroom simulations, and technology-enhanced instructional planning.

An important characteristic of the Korean model is its competency-oriented structure. Professional development is differentiated according to teachers' career stages, allowing beginning teachers, experienced teachers, mentors, and school leaders to follow different learning pathways.

Implications for Uzbekistan

Uzbekistan has recently initiated large-scale educational reforms emphasizing digital transformation and continuous professional development. However, several challenges remain:

- limited AI-oriented professional development programs;
- insufficient digital pedagogical competencies;
- lack of adaptive learning platforms;
- fragmented digital assessment practices;
- inadequate integration of learning analytics into teacher education.

Drawing upon Korea's experience, Uzbekistan may strengthen its professional development system through several strategic initiatives.

First, specialized AI Pedagogy Centers could be established within teacher professional development institutions to prepare educators for intelligent learning environments.

Second, AI-supported adaptive learning platforms should be developed to personalize teachers' professional development trajectories.

Third, national standards for digital pedagogical competence should be aligned with international competency frameworks.

Fourth, practical workshops focusing on AI-assisted lesson planning, digital assessment, and educational data analysis should become integral components of continuous professional development.

Finally, cooperation with Korean educational institutions would facilitate technology transfer, joint research projects, and exchange of professional expertise.

Main Findings

The study produced the following findings:

- Artificial intelligence significantly enhances the effectiveness of continuous teacher professional development.
- Korea has developed an integrated institutional model connecting AI, digital pedagogy, Smart Education, and lifelong learning.
- Personalized professional development improves teachers' motivation, digital competence, and instructional quality.
- AI-supported educational analytics facilitate evidence-based instructional improvement.

- Uzbekistan possesses favorable institutional conditions for adapting Korea's successful experience.
- International cooperation can accelerate digital transformation within teacher education.

Artificial intelligence has become a strategic component of modern teacher professional development. The Republic of Korea demonstrates that successful educational digitalization depends not only on technological infrastructure but also on systematic investment in teachers' professional competencies.

The Korean experience illustrates how AI, digital pedagogy, adaptive learning technologies, and institutional cooperation can create an innovative ecosystem supporting teachers' lifelong learning. These practices enable educators to respond effectively to rapidly changing educational environments while maintaining high instructional quality.

For Uzbekistan, adopting similar approaches could substantially improve teacher professional development, strengthen digital competence, and support the implementation of national educational reforms. Establishing AI-oriented professional development programs, expanding international cooperation, and integrating digital pedagogical innovations into continuous learning systems represent strategic priorities for sustainable educational development.

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