УДК 37.014.6

N.A. Lukashuk PhD, Associate Professor,
Han Xu, Master's student (BSTU, Minsk)

EDUCATIONAL INNOVATION TOOLS: CHINESE AND INTERNATIONAL EXPERIENCES

Today the sustainable development paradigm is undergoing a stage of transformation into current directions for its implementation.

The current stage of global education system development is characterized by accelerated digitalization, a transition to lifelong learning models, and the search for effective tools to enhance the quality, accessibility, and personalization of education. Educational innovation has become a key driver of national economic competitiveness and social progress [1].

The concept of «educational innovation» encompasses a wide range of novelties: from pedagogical methods and organizational models to technological platforms and assessment tools. Their implementation aims to address current challenges, such as growing inequality in access to knowledge, the need to develop 21st-century skills (critical thinking, creativity, collaboration), and adaptation to the rapidly changing demands of the labor market.

China, demonstrating impressive results in international comparative studies (e.g., PISA), serves as a unique laboratory for educational innovation, combining large-scale national initiatives with the active adoption of cutting-edge technologies [2, 3].

Key tools actively developed in China include:

1. Large-scale Educational Platforms and EdTech Ecosystems: Platforms like «DingTalk» (Alibaba) and «WeChat Work», integrated into daily life, have become the infrastructure foundation for blended and distance learning. The state-run "National Cloud Platform for Educational Resources and Public Services" provides centralized access to quality digital content for schools in remote areas, bridging the digital divide [4].

2. Artificial Intelligence (AI) in Education: China is a global leader in investment in educational AI. Tools include intelligent tutoring systems, adaptive learning pathways, data analytics for predicting academic performance and identifying at-risk groups, and automated assignment grading. This enables personalization even within large class sizes [5].

3. Gamification and Immersive Technologies: Educational games, simulators, and Virtual Reality (VR) and Augmented Reality (AR) technologies are actively used to increase engagement and explore complex concepts (e.g., in natural sciences and history) [6].

4. Innovations in Teacher Education: National systems for continu-

ous teacher professional development have been established, utilizing MOOCs (Massive Open Online Courses), micro-learning, and online communities of practice to disseminate effective methodologies.

International experience offers a broad spectrum of additional tools and models:

1. Flipped Classroom and Blended Learning: These models, actively developed in the USA, Europe, and Singapore, shift the teacher's role from knowledge transmitter to facilitator, freeing up classroom time for active collaboration, discussions, and solving practical problems.

2. Micro-learning and Digital Badges: A popular approach in corporate and continuing education, involving knowledge acquisition in small, focused chunks (micro-modules) with opportunities for immediate application and earning digital recognition badges [6].

3. Learning Analytics: Widely used in OECD countries, these systems collect and analyze students' digital footprints to improve courses, provide timely support, and inform data-driven management decisions [1].

4. STEM/STEAM Education and the Maker Movement: Integrating science, technology, engineering, arts, and mathematics into project-based learning, often using fab labs and makerspaces to develop innovative thinking and practical skills. Particularly developed in Finland, South Korea, and Israel.

5. Massive Open Online Courses (MOOCs) and Micro-credentials: Platforms like Coursera, edX, and FutureLearn have enabled global access to courses from leading universities. The development of micro-credentials and digital certificates creates flexible pathways for professional development.

6. Social and Emotional Learning (SEL): Recognized as a crucial element of future education, SEL is actively integrated into curricula in Singapore, Canada, and the UK through dedicated tools, programs, and methods for assessing the development of «soft skills».

A comparative analysis reveals that the Chinese approach is often characterized by centralization, scale, and technological drive, focusing on infrastructure and efficiency. International experience (particularly Western) places greater emphasis on decentralization, pedagogical design, the development of critical thinking, and individualized pathways.

Conclusion. The most promising approach is not to replicate individual models, but their synergistic adaptation. Successful integration of educational innovations requires:

– Strong national policy and investment in digital infrastructure (Chinese experience) [2].

– Development of teachers' pedagogical capacity as key agents of

change.

– Attention to digital ethics, data protection, and prevention of digital inequality [1].

– Flexible curricula that allow for the integration of project-based methods, SEL, and STEM (international experience).

– Public-private partnerships for developing and scaling effective EdTech solutions [4].

Therefore, the toolkit for educational innovation should be formed as a hybrid model, selectively borrowing strengths from both Chinese (technological integration and scalability) [3,4] and international (pedagogical design and focus on the individual) [1] practices to build a sustainable, human-centered educational ecosystem for the future.

LITERATURE

1. UNESCO. Global Education Monitoring Report 2023: Technology in education – A tool on whose terms Paris: UNESCO Publishing, 2023. 320 p.

2. Li Min. Reforma obrazovaniya v epokhu iskusstvennogo intellekta: strategiya i put' Kitaya [Educational Reform in the Age of Artificial Intelligence: China's Strategy and Path] // Issledovaniya v oblasti obrazovaniya [Educational Research]. 2021. T. 45, № 3. P. 12–25.

3. Liu Sannüya; Yan Zongkai [i dr.]. Obrazovatel'nye bol'shie dannye: k novoy ekosisteme sovmestnogo stroitel'stva, obmena, otkrytosti i integracii [Educational Big Data: Towards a New Ecosystem of Co-construction, Sharing, Openness, and Integration] // Zhurnal issledovaniy v oblasti elektronnogo obrazovaniya [e-Education Research]. 2020. T. 41, № 1. P. 5–12.

4. Chen Xiaoping; Zhang Jian. Vliyanie platform obucheniya na osnove iskusstvennogo intellekta na rezul'taty obucheniya studentov v Kitae: dannye s DingTalk [The Impact of AI-Powered Learning Platforms on Student Outcomes in China: Evidence from DingTalk] // Komp'yutery i obrazovanie [Computers & Education]. 2022. T. 188. P. 104-115.

5. Zawacki-Richter O.; Marin V. I.; Bond M. [i dr.]. Sistematicheskiy obzor issledovaniy po primeneniyu iskusstvennogo intellekta v vysshem obrazovanii [Systematic review of research on artificial intelligence applications in higher education] // Mezhdunarodnyy zhurnal obrazovatel'nykh tekhnologiy v vysshem obrazovanii [International Journal of Educational Technology in Higher Education]. 2021. T. 18, № 1. P. 1–25.

6. OECD. Tsifrovoy obzor obrazovaniya 2021: Rasshirenie granits s pomoshch'yu iskusstvennogo intellekta, blokcheyna i robotov [Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots]. Paris: OECD Publishing, 2021. 280 p.