# AN IMPROVED PEDAGOGICAL MODEL FOR THE USE OF DIGITAL PLATFORMS AND SOFTWARE

**TengelbaevaDinora Muratovna**

*PhD student of Nukus State Pedagogical Institute*

**ABSTRACT.** The paper presents an improved pedagogical model for the purposeful use of digital platforms and educational software. The model addresses a common limitation of technology integration: the separation of platform functions from learning objectives, student activity, formative assessment, accessibility, and evidence-based improvement. An integrative analysis of international frameworks and research on digital competence, multimedia learning, student engagement, and learning analytics was used to construct a five-block model comprising target, methodological, process, technological-support, and evaluation-result components. Its distinctive features are learner-centred alignment, adaptive support, multi-source evidence, ethical data governance, and a continuous feedback mechanism. The model provides a systematic basis for selecting, implementing, and evaluating digital tools in higher education.

**Keywords:** digital platform, educational software, pedagogical model, instructional alignment, adaptive learning, formative feedback, learning analytics, digital competence.

## INTRODUCTION

Digital platforms have expanded the organisational and didactic possibilities of education. Learning management systems, simulations, virtual laboratories, collaborative environments, mobile applications, adaptive systems, and artificial intelligence tools can support content delivery, interaction, individual learning pathways, and continuous assessment. However, technology frequently remains an additional channel for distributing materials rather than a mechanism for transforming learning. This occurs when platform selection precedes pedagogical diagnosis and when usage statistics are treated as evidence of learning.

The research problem is the contradiction between the growing functionality of digital platforms and the insufficient integration of their functions into a coherent pedagogical system. The aim of this paper is to substantiate an improved model that links educational goals, student activity, teacher facilitation, digital functions, formative feedback, inclusion, ethics, and measurable outcomes.

MATERIALS AND METHODS

The study used modelling, comparative analysis, synthesis, and an integrative review of international reports and scholarly publications. The theoretical basis included the DigCompEdu framework, multimedia learning theory, research on student engagement, self-regulated learning, learning analytics, and effective digital-education ecosystems. Model components were selected according to four criteria: pedagogical necessity,

functional interdependence, observability in educational practice, and contribution to learning outcomes.

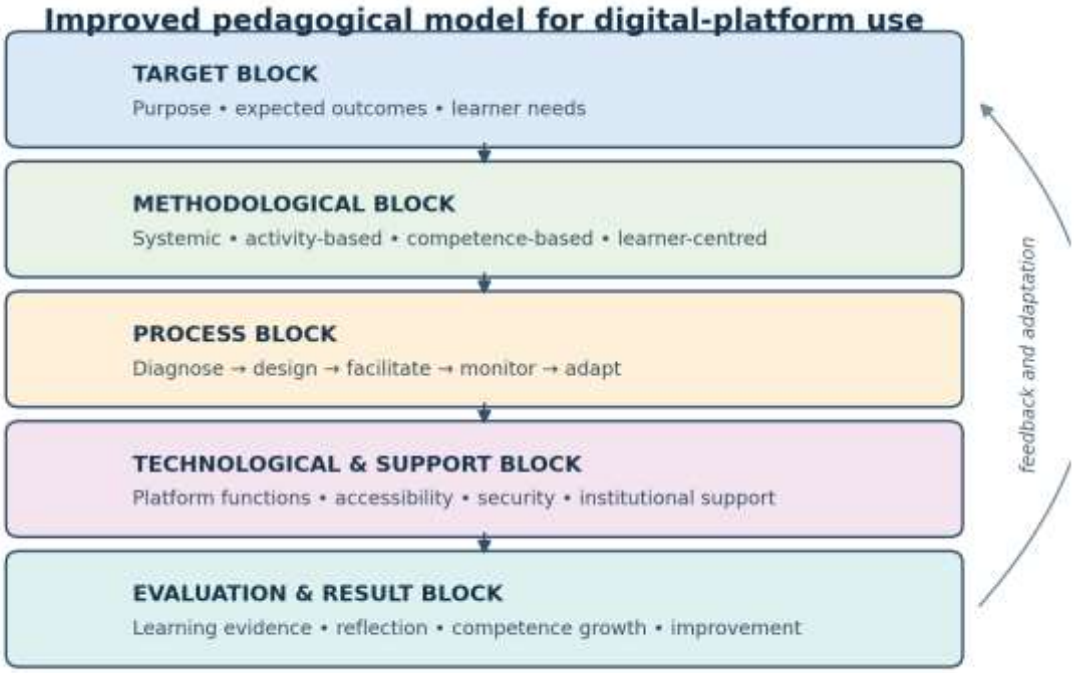


*Figure 1. Architecture of the improved pedagogical model.*

RESULTS AND DISCUSSION

**1. Structure of the improved model**

The target block defines the pedagogical purpose, expected learning outcomes, learner needs, and initial conditions. It prevents technology-centred planning by requiring educational objectives and baseline diagnostics before platform selection. The methodological block combines systemic, activity-based, competence-based, learner-centred, and reflective approaches. These approaches determine that knowledge must be constructed through purposeful activity and evaluated through observable competence rather than passive platform participation.

The process block organises five interrelated actions: diagnosis, instructional design, facilitation, monitoring, and adaptation. The technological and support block includes platform functions, accessibility, information security, technical assistance, and institutional conditions. The evaluation-result block integrates student products, rubric-based assessment, learning analytics, self-assessment, and teacher observation. Results are interpreted as evidence for the next design cycle.

**2. Improvements introduced by the model**

Compared with function-oriented approaches, the proposed model introduces five improvements. First, digital-tool selection is subordinated to learning outcomes. Second, platform activity is connected to meaningful student action such as problem solving, inquiry, creation, collaboration, and reflection. Third, learning analytics are triangulated with qualitative evidence instead of being interpreted in isolation. Fourth, accessibility,

academic integrity, and data protection are embedded across all model blocks. Fifth, evaluation generates an explicit feedback loop through which teaching strategies and platform configurations are revised.

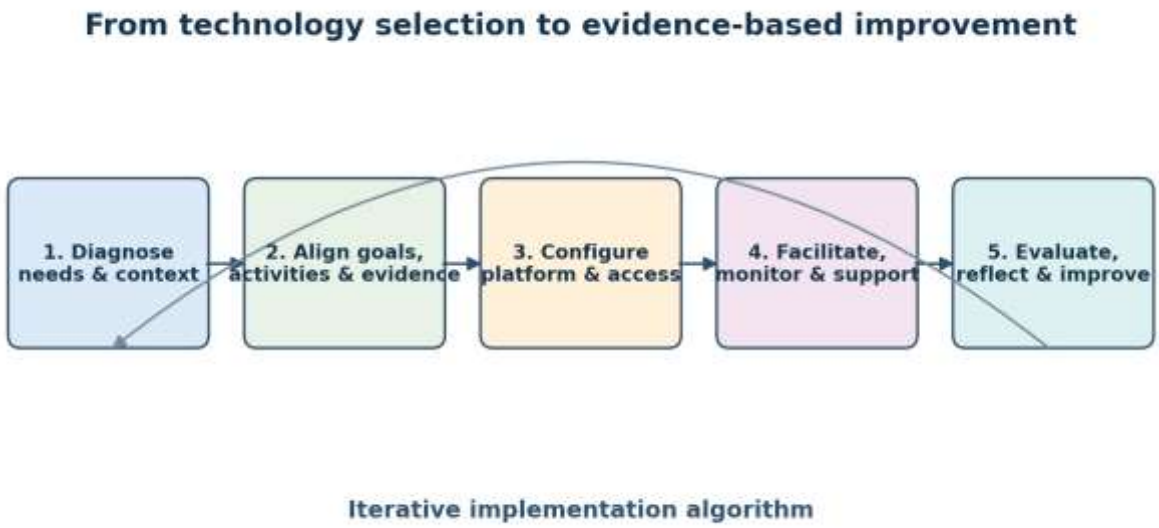


*Figure 2. Algorithm for implementing the improved pedagogical model.*

**3. Implementation mechanism**

Implementation begins with diagnosis of learner readiness, digital access, prior knowledge, course objectives, and institutional capacity. The second stage aligns expected outcomes with activities and evidence. The third stage configures the platform: content modules, communication channels, adaptive support, accessibility features, assessment instruments, and data-access permissions. During implementation, the teacher facilitates interaction, interprets formative evidence, and provides differentiated support. The final stage evaluates outcomes and determines which elements should be retained, modified, or discontinued.

**4. Roles of teacher, learner, and platform**

The teacher functions as designer, facilitator, diagnostician, feedback provider, and ethical decision-maker. The learner becomes an active subject who sets goals, performs meaningful tasks, collaborates, monitors progress, and reflects on results. The platform performs supporting functions: organising resources, enabling interaction, recording evidence, providing feedback, and offering adaptive recommendations. It does not replace pedagogical judgement or learner agency.

**5. Evaluation criteria and expected outcomes**

The model is evaluated through six criteria: alignment of goals, activities, and assessment; cognitive and social engagement; quality and timeliness of feedback; accessibility and equitable participation; validity of collected evidence; and improvement of learning outcomes. Expected results include stronger self-regulation, deeper

engagement, improved digital competence, timely correction of learning difficulties, greater transparency of assessment, and more sustainable institutional use of technology.

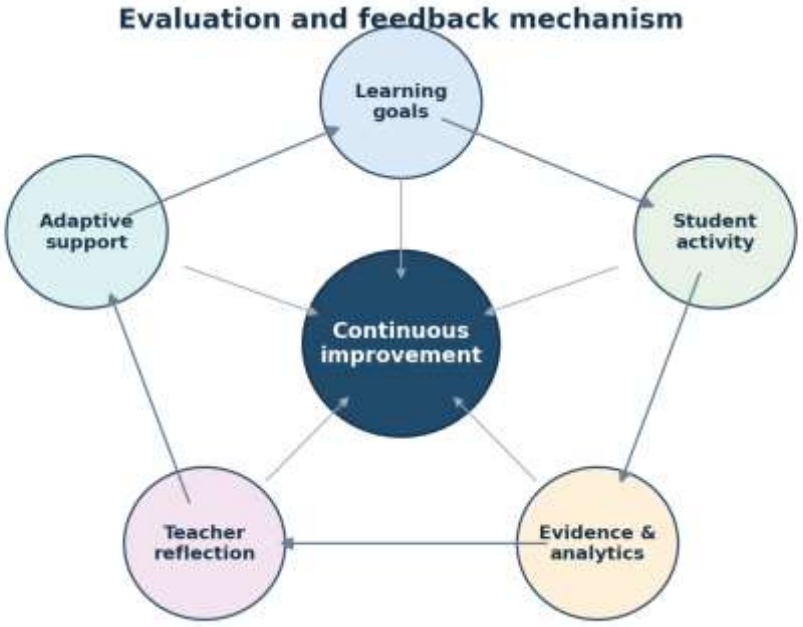


*Figure 3. Evaluation and feedback mechanism of the improved model*

CONCLUSION

The proposed model treats the use of digital platforms as a pedagogically managed system rather than a collection of technical operations. Its five blocks connect purpose, methodology, learning processes, technological support, evaluation, and continuous improvement. The principal innovation lies in the integration of adaptive learner support, multi-source evidence, accessibility, ethical data governance, and a cyclical feedback mechanism.

The model can support course design, teacher professional development, institutional platform evaluation, and research on technology-enhanced learning. Its practical effectiveness should be tested through experimental and longitudinal studies across different disciplines and levels of digital maturity. Nevertheless, the model provides a coherent framework for transforming platform use from digital content delivery into active, inclusive, reflective, and evidence-based education.

## REFERENCES

1. Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O., & Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: A systematic evidence map. International Journal of Educational Technology in Higher Education, 17, Article 2. https://doi.org/10.1186/s41239-019-0176-8

2. Blumenstein, M. (2020). Synergies of learning analytics and learning design: A systematic review of student outcomes. Journal of Learning Analytics, 7(3), 13–32. https://doi.org/10.18608/jla.2020.73.3

3. Ifenthaler, D., & Yau, J. Y.-K. (2020). Utilising learning analytics to support study success in higher education: A systematic review. Educational Technology Research and Development, 68, 1961–1990. https://doi.org/10.1007/s11423-020-09788-z

4. Mayer, R. E. (2021). Multimedia Learning (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781316941355

5. OECD. (2023). OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem. OECD Publishing. https://doi.org/10.1787/c74f03de-en

6. Redecker, C. (2017). European Framework for the Digital Competence of Educators: DigCompEdu. Publications Office of the European Union. https://doi.org/10.2760/159770

7. UNESCO. (2023). Global Education Monitoring Report 2023: Technology in Education—A Tool on Whose Terms? UNESCO.