Pressburg Economic Review
December 2025
Volume 5, No: 1 pp. 66-71
ISSN: 2754-2556
http://pressburgcentre.org/per

Fostering Critical Thinking through Digitally Mediated Pedagogy in Economics: Insights from a Conceptual Framework and Pilot Design

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Abstract

The rapid integration of digital tools into university teaching environments has created new possibilities for developing higher-order cognitive competencies, particularly in fields requiring analytical and conceptual reasoning, such as economics. This paper presents a pedagogical framework that leverages digital technologies to foster critical thinking in economics education. Building on the principles of Education 4.0 and aligned with recent calls for learner-centred, evidence-informed teaching strategies, the study conceptualises a digitally mediated approach to curriculum design and instructional delivery. Rather than presenting empirical results, the paper develops and reflects on the pilot implementation of a framework that links specific digital tools (e.g., collaborative annotation platforms, gamified feedback systems, and visualisation tools) to defined learning outcomes and classroom scenarios. The framework is tailored to support the integration of formative assessment, collaborative engagement, and reflective learning. By emphasising conceptual clarity, pedagogical alignment, and technological relevance, the study contributes a novel and transferable model for embedding critical thinking development into the economics curriculum.

Keywords: digital pedagogy, critical thinking, higher education, instructional design, economics education
JEL classification: A20, A22, I23, O33

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* This article was prepared with the support of the KEGA project No. 016EU-4/2024, „Ekonomické vzdelávanie prostredníctvom integrácie inovatívnych digitálne zdokonalených stratégií výučby.“

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1.Introduction

The digital transformation of higher education has prompted significant changes in the way economic concepts are taught, assessed, and contextualised. As digital platforms become increasingly embedded into instructional practices, there is a growing imperative to align these tools with pedagogical goals rather than technological novelty. At the heart of this transformation lies the challenge of cultivating cognitive competencies—particularly critical thinking—which is essential for interpreting economic data, evaluating policy arguments, and engaging with complex global problems.

In economics education, traditional lecture-based models often fall short of fostering such competencies. While digitalisation offers opportunities to redesign pedagogical approaches, these opportunities remain underutilised unless strategically embedded into teaching design. This paper addresses this gap by proposing a digitally mediated teaching framework explicitly focused on enhancing critical thinking in economics instruction. The framework was developed and piloted at the Bratislava University of Economics and Business as part of a national education innovation project (KEGA 016EU-4/2024).

The aim of this paper is twofold: (1) to present the structure and pedagogical rationale of the framework, and (2) to reflect on its potential to support student engagement, analytical reasoning, and cognitive development in economics courses. The paper offers conceptual foundations and design logic that can be adapted to various institutional and disciplinary contexts.

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2. Literature Review

2.1 Critical Thinking in Economics Education

Critical thinking refers to the ability to analyse, synthesise, and evaluate information in a reflective and reasoned manner. In economics, this includes assessing the validity of models, recognising the assumptions behind theories, interpreting statistical evidence, and formulating arguments about economic policies.

Research has shown that cultivating critical thinking requires more than exposure to theoretical content. Active learning, discussion, and iterative feedback are all necessary components of learning environments that support higher-order thinking. However, in economics, traditional instruction often centres around problem sets, multiple-choice testing, and model memorisation, which limits students' engagement with ambiguity and multiple perspectives.

2.2 Digital Tools and Education 4.0

Education 4.0 is a pedagogical paradigm aligned with the technological and societal changes of the Fourth Industrial Revolution. It calls for greater integration of digital tools into learning environments to support collaboration, personalisation, and the development of transversal competencies.

Digital tools can serve as catalysts for learning transformation when integrated purposefully. Tools such as collaborative annotation platforms (e.g., Hypothes.is), mind-mapping and visualisation apps (e.g., Miro), and gamification systems (e.g., Kahoot, Mentimeter) provide interactive formats that foster engagement, reflection, and dialogue. However, their impact depends on alignment with learning outcomes and instructional methods.

2.3 Pedagogical Frameworks for Digitally Mediated Learning

The concept of digital mediation emphasises the pedagogical logic through which technologies influence the learning process. A robust digital pedagogy does not treat tools as neutral add-ons but as integral components of instructional design. Effective frameworks map technological functions to cognitive processes, such as inquiry, argumentation, and reflection.

A recent wave of literature calls for conceptual models that connect critical thinking development with specific learning activities and digital affordances. This paper responds to this call by proposing a framework that situates tool selection within a matrix of pedagogical intent, student interaction, and content complexity.

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3. Data and Methodology

3.1 Research Design and Methodological Approach

The study employs a design-based research methodology, which is widely used for developing and refining educational interventions in authentic settings. This approach is particularly suitable for contexts where the objective is not empirical validation but conceptual coherence and practical utility.

The development of the framework proceeded through three interrelated phases. In the first phase, desired learning outcomes related to critical thinking in economics were identified. The second phase focused on mapping appropriate digital tools to clearly defined pedagogical objectives and specific classroom contexts. In the third phase, the framework was pilot tested in selected courses, followed by a structured reflection on its feasibility and pedagogical relevance.

3.2 Data Sources and Context

The framework was developed as part of a broader institutional project focused on digital innovation in economics education. Pilot testing was conducted in Master-level courses at the Faculty of Economics and Finance, including courses covering microeconomic theory, behavioural economics, and public finance.

The design and reflection process drew on multiple qualitative data sources. These included institutional curriculum documents, instructor reflections and teaching portfolios, structured feedback collected from student discussions, and systematic observations of classroom implementation. The study does not rely on quantitative student assessment data but instead builds on qualitative design logic and accumulated institutional learning.

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4. Results and Discussion

4.1 Framework Structure and Logic

The Digitally Mediated Critical Thinking Framework (DMCTF) developed in this study consists of three integrated layers. The first layer focuses on cognitive competencies, which are defined by course-level learning outcomes with an emphasis on reasoning, evaluation, and interpretation. The second layer comprises pedagogical strategies, including structured debates, group problem-solving activities, and collaborative text annotation, all of which are explicitly mapped to the targeted competencies. The third layer consists of digital tool functions, which are selected based on their capacity to support the identified pedagogical strategies. Within this framework, collaborative annotation platforms such as Hypothes.is are used to facilitate critical engagement with academic readings. Visualisation tools such as Miro support the representation and examination of economic models and their underlying assumptions. Real-time feedback and question aggregation are enabled through platforms such as Sli.do, while formative assessment and gamified revision are supported through tools like Kahoot. Each learning activity was designed with clear assessment rubrics to ensure that digital interaction meaningfully contributes to the development of critical thinking skills.

4.2 Classroom Implementation Insights

Pilot implementations indicated that digital mediation positively influenced several dimensions of classroom interaction. It encouraged broader student participation, particularly among students who tend to be less vocal in traditional classroom settings. The framework also supported differentiated pacing and reflective engagement, allowing students to interact with course content at varying depths. Furthermore, it enabled iterative feedback and revision cycles, which contributed to deeper conceptual understanding. Importantly, students demonstrated an increased willingness to question assumptions and critically engage with economic texts. Instructors involved in the pilot phase observed that effective digital integration required advanced pedagogical planning, sufficient technical familiarity, and clear instructional scaffolding. In the absence of these conditions, the digital component risked becoming performative or distracting rather than pedagogically meaningful.

4.3 Challenges and Lessons Learned

Several challenges emerged during the implementation of the framework. These included varying levels of digital literacy among students, the potential risk of cognitive overload resulting from the use of multiple digital platforms, and institutional inertia related to the adoption of non-traditional assessment approaches.

Despite these challenges, the experience demonstrated that the use of simple, low-threshold digital tools—such as real-time polling systems or shared digital whiteboards—can be particularly effective. Such tools contributed to the creation of dynamic learning environments while reinforcing conceptual depth without imposing excessive technical demands on students or instructors.

5. Concluding Remarks

This paper has introduced a conceptual framework that links digital tools to pedagogical strategies aimed at fostering critical thinking in economics education. Unlike traditional lecture-based models, the digitally mediated framework supports student engagement through structured dialogue, reflection, and collaborative exploration of economic ideas.

While further empirical testing is needed to measure its impact on learning outcomes, the framework provides an adaptable and theoretically grounded foundation for instructional innovation. It contributes to the growing body of work calling for more reflective, evidence-aligned, and digitally enriched economics curricula.

6. Acknowledgements

This study was supported by the KEGA project No. 016EU-4/2024, „Ekonomické vzdelávanie prostredníctvom integrácie inovatívnych digitálne zdokonalených stratégií výučby.“

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