RESEARCH PRESENTATION • EDUCATIONAL SCIENCES (SPECIALTY A1)

PEDAGOGICAL PRINCIPLES OF REGULATING THE USE OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

Connecting university rules on AI with learning objectives, learner autonomy, transparent assessment, and teacher preparation

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Relevance and Problem Statement

Transforming learning activities and addressing assessment challenges in Higher Education Institutions (HEIs)

01

Assessment Challenge in HEIs

- Instructors must determine how a student completed a task and what they actually learned.
- AI makes it possible to obtain explanations, prepare materials, or use a ready-made answer.
- Assessment requires clearly distinguishing between tool actions and the learner's independent work.

02

Requirements for University Graduates

- Ability to independently justify professional decisions and take responsibility for completed work.
- Critical evaluation of information and understanding of the capabilities and limitations of digital tools.
- Ensuring the quality of professional training and fostering human capital development.

03

Tasks of the University of the Future

- Creating conditions for mastering intellectual tools and ensuring equitable access to them.
- Specifying national guidelines from the Concept for the Development of AI in Ukraine for the educational process.
- Updating rules for task execution, material preparation, and learning outcome assessment.

Core Tension: Balancing the widespread availability of generative AI with preserving learner autonomy and objective assessment.

Regulatory and Research Background

Analysis of national guidelines, international frameworks, and university policies

1. AI Development Concept in Ukraine (CMU, 2020)

- Establishes national priorities for the development of artificial intelligence technologies.
- Requires specific pedagogical translation and adaptation for the higher education process.

2. MES & Ministry of Digital Transformation (2025)

- Evaluating the suitability and risks of an AI system for the specific activity in which it is applied (p. 13).
- Adopting internal HEI policies, defining limits for AI in graded work, and building AI literacy (p. 14).

3. C. K. Y. Chan's 3D Policy Framework (2023)

- Combines pedagogical, governance, and operational dimensions of university AI policy.
- Links rules to participant activities: teaching methods, assessment, data handling, and infrastructure.

4. Survey of World's Top 50 Universities (Ullah et al., 2024)

- Highlights the need for comprehensive and regularly updated rules on generative AI.
- Identifies gaps in documenting prompts/outputs and mechanisms for reporting violations.

5. UNESCO Guidance on GenAI (Miao & Holmes, 2023)

- Examines generative AI through the lens of preserving human agency, learner autonomy, and pedagogical soundness.
- Transparency of tool use must be accompanied by verification of how tools are involved in learning.

6. Igor Sikorsky KPI AI Policy (2023)

- Example of institutional specification: mandatory documentation of generative AI use (p. 3).
- Instructor's right to define restrictions in the course syllabus prior to the start of learning activities.

Research Objective, Subject, and Methodology

Theoretical justification of pedagogical regulation principles for AI in higher education

SUBJECT OF RESEARCH

Pedagogical conditions for applying institutional policies and responsible use of AI in learning.

RESEARCH OBJECTIVE

To substantiate the pedagogical principles of regulating AI technologies in HEIs and determine ways to implement them in teaching and assessment.

METHODOLOGICAL FOUNDATION

Theoretical review of scholarly publications and alignment of recommendations with university policy: AI use must correspond to expected learning outcomes.

Systemic Approach

Accounts for the holistic interaction between the learner, the instructor, and the university educational environment.

Process Approach

Defines the logical sequence of introducing, verifying, and adjusting regulatory rules.

Risk-Based Approach

Helps differentiate learning scenarios depending on potential consequences of errors or substitution of independent work.

Institutional Approach

Ensures alignment between course-level pedagogical requirements and overall university policy.

Pedagogical Conditions for Regulation (Conditions 1–3)

Alignment with learning objectives, clear boundaries of assistance, and transparency of contribution

Condition 1. Alignment with Learning Objectives

- Before selecting a tool, the instructor defines the target action the student must master: formulating a problem, comparing arguments, verifying sources, or justifying a decision.
- If the tool performs the exact action to be assessed as independent work, its use must be restricted or the task modified.
- Assistance must be defined so that the student's own contribution remains clearly visible.

Condition 2. Clear & Pre-Announced Boundaries

- Differentiating modes by task: fully independent completion, structuring one's own ideas, or analyzing model outputs.
- Addressing diverse stances on the admissibility of generative AI during assessment (MES & MDT Recommendations, p. 45).
- Explaining the chosen stance through course goals and concrete actions required of the learner.

Condition 3. Transparency of Participant Contribution

- Recording the tool name, purpose of use, nature of the output used, and the student's own verification and edits.
- Proportional documentation: saving intermediate drafts for complex analytical tasks vs. a brief note for short tasks.
- Declaration alone does not prove quality and must be supported by substantive discussion.

Pedagogical Conditions (Conditions 4–5), Equity & Data Privacy

Assessing the reasoning process, participant preparation, equal access, and data protection

Condition 4. Assessing Reasoning Alongside Final Output

- Assessment criteria include validity of conclusions, reliability of sources, explanation of revisions, and ability to apply solutions under changed conditions.
- Verification formats: brief oral defense of choices or completion of a follow-up clarifying task.
- Specific formats and their weight in the final grade are determined by the instructor according to the course component.

Condition 5. Preparation of Instructors and Learners

- Shared competencies: understanding tool limitations, verifying information, and following data privacy and academic integrity rules.
- Instructor's role: designing tasks with a defined scope of AI assistance and explaining what is graded as independent work.
- Learner's role: critically evaluating AI outputs and taking full responsibility for materials included in their work (using discipline-specific examples).

Ensuring Equal Access and Data Protection in Learning

- Equal Access: A paid subscription must not be a hidden requirement; if a student lacks access, the instructor provides a shared sample AI output for analysis or an equivalent non-AI task.
- Data Protection: Verifying legal grounds and processing terms before entering personal or confidential data into external services; using synthetic/dummy data for class examples.

Practical Scenario: Professional Case Analysis

Proposed instructional workflow for learner interaction with AI (subject to empirical validation)

STEP 1

Independent Solution

The learner first analyzes the professional situation independently and formulates their own position and solution.

STEP 2

Comparison with AI

Where permitted by task rules, the learner compares their initial solution with the AI-generated response.

STEP 3

Source Verification

The learner checks disputed claims against task materials and authoritative primary sources.

STEP 4

Justifying Revisions

The learner explains accepted changes and integrates valid AI outputs with proper disclosure and justification.

Key Methodological Principle for Scenario Assessment:

The sheer number of errors found in the AI response must NOT replace the evaluation of the quality of the learner's argumentation. Assessment focuses on depth of reasoning and justification.

Five-Block Institutional Implementation Mechanism

Translating pedagogical requirements into university policy and everyday academic practice

1. Regulatory & Legal

Codifying general rules, academic standards, and permissible boundaries of AI use in internal university regulations.

2. Organizational

Designating responsible officers and distributing responsibilities across university units, departments, and program leads.

3. Educational & Methodological

Training users (faculty and students), updating syllabi, and adapting learning tasks and assessment rubrics.

4. Technological

Establishing secure conditions for tool access, infrastructure support, and data handling protocols.

5. Monitoring & Control

Verifying compliance with established rules, reviewing implementation practices, and periodically updating policies.

Through these five interconnected blocks, pedagogical requirements are operationalized in university policy and learning activities.

Monitoring and Evaluating Approach Effectiveness

Distinguishing between pedagogical learning outcomes and organizational metrics

Pedagogical Indicators (Learning Outcomes — Primary Focus)

- How well the learner justifies professional decisions during task execution and defense.
- Ability to identify unverified or inaccurate claims in generated materials.
- Clarity and thoroughness in explaining one's own contribution and revisions.
- Ability to transfer and apply the mastered method of action to a different learning task.

Organizational Indicators & Feedback (Secondary Track)

- Number of recorded AI uses or statistics on rule violations belong to organizational indicators.
- Crucial caveat: A change in the number of uses or violations alone does not prove improved learning outcomes and must be analyzed separately.
- Systematic collection of feedback from instructors and learners.
- Analysis of practical difficulties encountered by participants during implementation.

Conclusions and Further Research Prospects

Summary of theoretical proposals and roadmap for empirical verification

Key Conclusions

- Rules on AI use in higher education must be aligned with learning objectives, learner autonomy, and transparent assessment.
- Organizational conditions for this alignment are provided by the five-block institutional mechanism.
- The presented provisions represent theoretical proposals; conclusions on effectiveness can only be drawn after empirical testing.

Future Research & Implementation

- Developing instructional materials, methodological guidelines, and detailed assessment criteria.
- Piloting and empirically testing the proposed pedagogical conditions across specific educational components.
- Refining verification procedures and institutional feedback loops based on classroom evidence.

References:

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