

THE INNOVATION PROCESS AS A MECHANISM FOR MODERNIZING HIGHER EDUCATION IN UZBEKISTAN: AN ORGANIZATIONAL MODEL AND MANAGEMENT CYCLE

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Abstract: *The article proposes an organizational model of the innovation process as a management cycle for modernizing higher education in Uzbekistan: six stages (diagnosis → design → piloting → evaluation → scaling → institutionalization) and three levels of operation (didactic, curricular, organizational-technological). The emphasis is on the alignment of “structure + culture,” psychological safety, and verifiable learning outcomes.*

Keywords: *innovation process; higher education; organizational model; management cycle; competence-based approach; digital pedagogy; organizational culture; adoption of innovations.*

1. Relevance and Aim

Modernization pressures—labor market shifts, quality standards, and digital transformation—require universities to move from the transmission of knowledge to the management of learning and change. The aim is to (a) articulate the conceptual basis of educational innovation as purposeful change validated by learning outcomes, and (b) specify a management cycle and organizational architecture that make innovation planable, testable, and scalable in Uzbek universities.

2. Conceptual Foundations

In education, innovation is purposeful change that renews programs and practices and is validated by learning outcomes, student experience, and capability development—not by profitability or market share. Adoption is staged (awareness → evaluation → trial → decision → sustained use) and depends on both structure (policies, resources, processes) and culture (motivation, safety, mentoring, leadership).

3. Four-Dimensional Classification (with Examples)

We consolidate four dimensions to inform governance choices and portfolio design:

- Carrier: material vs. immaterial.

Examples (Uzbek HE): LMS and analytics dashboards; vs. methods (project-based learning), assessment rubrics, mentoring protocols.

- Depth: modifying vs. radical.

Examples: adding formative rubrics to existing courses (modifying) vs. moving to outcomes-based modular programs (radical).

- Scope: local; modular/complex; system-wide.

Examples: one faculty's case-seminars (local); university-wide digital portfolio with capstones (system-wide).

- Functional orientation: organizational; technological; curricular; managerial; ecological.

Examples: Center for Academic Development (organizational); flipped/blended models (technological); interdisciplinary modules (curricular); piloting and scaling regulations (managerial); healthy, inclusive learning environments (ecological).

Note. Example of how to read the matrix: Material × Modifying × Local × Technological → use of clickers and/or the LMS in an entry-level (gateway) course; Immaterial × Radical × System-wide × Curricular → an outcomes-based modular curriculum with capstone defenses. In addition, subjective novelty is considered: a practice becomes innovative for a particular academic community when it is reflectively adopted and embedded in routines; this legitimizes staged appropriation and supports staff development.

4. External and Internal Conditions

External drivers: national policies and quality standards, labor market expectations, scientific-technological trends, international collaboration.

Internal conditions: organizational readiness (resources, regulations, infrastructure), faculty competence and motivation, governance mechanisms for innovation, and positive pedagogical experience acting as an adoption catalyst. Psychological enablers—safety, mentoring, quick wins, distributed leadership—are decisive for progression through adoption stages.

5. Organizational Model: A Six-Stage Management Cycle

1. Diagnosis & Ideation: clarify the problem, hypothesize change, define target indicators with stakeholders.

2. Design: specify objects/boundaries, resources, risks, metrics; translate ideas into implementable plans.

3. Piloting: time-boxed micro-pilots with methodological support and communication; protect teams from disproportionate risk and collect actionable feedback.

4. Evaluation: validation framework combining learning outcomes (rubrics), portfolio artifacts, LMS analytics (engagement, completion, quality of submissions), and structured reflection.

5. Scaling: transfer validated practices (from local experiments to regulated processes) with templates and supports.

6. Institutionalization: embed in QA systems, role definitions, normative documents, and budget cycles; schedule regular reviews.

6. Three Levels of Operation (mechanisms → metrics → roles)

1. Didactic level: problem/project-based learning, case analysis, dialogic formats, flipped lectures, blended designs oriented to transfer and critical thinking. Metrics: task-specific rubrics; improvement in argumentation/transfer scores; micro-presentations.

Roles: course teams, mentors, student co-authors.

2. Curriculum level: outcomes-based modular design, interdisciplinary modules, individual learning pathways, portfolio assessment, transparent rubrics. Metrics: constructive alignment checks; capstone performance; evidence of cross-course transfer.

Roles: program councils, QA units, external reviewers.

3. Organizational-technological level: platforms and analytics; academic development centers; piloting and scaling regulations; communities of practice; appraisal of innovation activity.

Metrics: uptake rates; time-to-scale; policy adoption; participation in communities of practice.

Roles: leadership, IT/QA, Center for Teaching and Learning.

7. Illustrative Micro-Pilot (design example)

Context: first-year “General Pedagogy” module; two groups; blended delivery.

Intervention: introduce a validation chain “artifact — rubric — brief defense”: students complete a mini-project (problem analysis → proposed method → short defense), evaluated by a three-criterion rubric (argumentation, evidential support, transfer).

Data: baseline and post rubrics; LMS engagement (on-time submissions, discussion posts); reflective logs.

Decision rule: scale if $\geq 70\%$ of students reach 3.5/5 on argumentation and transfer, with $\geq 15\%$ improvement in on-platform completion vs. baseline; otherwise iterate design and re-pilot.

Purpose: demonstrate practical governability (clear thresholds, data sources, and next-step logic) without claiming uncollected results.

8. Indicator Map for Monitoring

Goal (example)	Indicator	Data source	Frequency	Success threshold
Critical thinking (course)	Mean rubric score (argumentation)	Mini-project/defense rubric	End of module	$\geq 3.5 / 5$
Transfer of methods	Transfer evidence in new task	Portfolio artifacts	Midterm and final	$\geq 70\%$ show explicit transfer
Engagement	On-platform completion/interaction	LMS analytics	Weekly	+15% vs. baseline
Program alignment	Objectives ↔ content ↔ assessment consistency	Alignment checklist	Each revision	100% criteria met
Scaling	Practice codified and resourced	QA docs / budget lines	Semesterly	Policy adopted + training run

9. Addressing Uzbek Context Constraints

- Time and readiness constraints: use proportionate micro-pilots and ready-to-use templates (rubrics, checklists).
- Uneven methodological preparation: mentoring and communities of practice to convert individual experiments into shared knowledge.
- Heterogeneous adoption: track both usage (analytics) and quality (rubrics); celebrate quick wins; ensure psychological safety.

10. Contribution and Future Work

- Contribution: integrated view (classification → environmental factors → six-stage cycle → multi-level architecture), operationalized via the indicator map and validation framework; provides a governable roadmap regardless of disciplinary profile.

▪ Future work: multi-program empirical studies to estimate effect sizes and boundary conditions; open templates (rubrics, monitoring maps, reflection protocols) to enhance reproducibility across institutions; closer study of communities of practice in resource-constrained settings.

II. Conclusion

The innovation process is a key mechanism for modernizing higher education in Uzbekistan—effective only when structure (policies, resources, processes) is allied with culture (motivation, mentoring, psychological safety). By specifying a staged, evidence-informed, and context-aware cycle that operates across didactic, curriculum, and organizational-technological levels, the model turns innovation from declarations into durable practice and raises the predictability of outcomes and the transparency of change management.

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