

Integrating Curriculum Innovation and Adaptive Learning Design to Promote Meaningful Learning in Higher Education

Sri Puguh Kristiyawati*, Fakhruddin Fakhruddin, Suwito Eko Pramono,
Tri Joko Raharjo

Universitas Negeri Semarang, Semarang, Indonesia

*Corresponding Author: puguhkristy@students.unnes.ac.id

Abstract. Digital technology transformation, changing labor market demands, and the diversity of student characteristics require higher education institutions to continuously innovate their curricula and renew their learning design. Curriculum can no longer be understood merely as a list of courses, but as a structured learning experience that connects learning outcomes, graduate competencies, instructional strategies, assessment, and the needs of society and the labor market. This article aims to analyze the integration of curriculum innovation and adaptive learning design in promoting meaningful learning in higher education. This article employs a conceptual literature review approach by examining relevant publications from the last five years on competency-based curriculum, outcome-based education, adaptive learning, student-centered learning, blended learning, and artificial intelligence in higher education. The findings indicate that curriculum innovation should be directed toward learning flexibility, competency strengthening, alignment with labor market needs, and continuous evaluation. Meanwhile, adaptive learning design is needed to adjust learning strategies, media, activities, and assessment to the diverse needs of students. The integration of these two aspects can promote meaningful learning because students do not only understand concepts, but are also able to connect theory with real-life experiences, think critically, solve problems, and develop professional competencies. This article offers a conceptual framework suggesting that meaningful learning can be achieved through an integrated relationship among curriculum innovation, adaptive learning design, digital technology, and student-centered learning.

Keywords: curriculum innovation, adaptive learning design, meaningful learning, higher education, competency-based curriculum.

INTRODUCTION

Higher education is currently facing rapid and complex changes. The development of digital technology, transformation of the labor market, globalization, and changing student needs require higher education institutions to move beyond conventional learning models. Universities are expected to produce graduates who possess academic competence, professional skills, digital literacy, critical thinking, creativity, collaboration, communication skills, and the ability to adapt to change (Mufanti et al., 2024).

In this context, curriculum innovation has become a strategic necessity. Curriculum should not be understood merely as a collection of courses, but as a learning experience design that guides students toward the achievement of specific competencies. Cravero et al. developed the Meta4CBC model, which emphasizes that competency-based curriculum design in higher education needs to be systematically developed from the institutional level to learning activities,

so that learning outcomes can be clearly translated into students' learning processes.

In Indonesia, the outcome-based education approach has been increasingly adopted in higher education because it emphasizes the achievement of student competencies, such as critical thinking, problem-solving, communication, and collaboration. However, its implementation still faces several challenges, including lecturer readiness, limited infrastructure, and institutional resistance to change.

In addition to curriculum innovation, higher education institutions also need to develop adaptive learning design. Adaptive learning design refers to instructional planning that adjusts strategies, media, activities, learning pace, and forms of evaluation according to students' needs. A study by du Plooy et al. shows that personalized adaptive learning in higher education has the potential to improve academic performance, student engagement, and learning experience, although its implementation still faces

technological and practical challenges (Bond et al., 2024).

The development of artificial intelligence, learning analytics, learning management systems, and blended learning expands the opportunities for implementing adaptive learning. Bond et al. explain that AI in higher education can be used for learning personalization, learning pathway recommendations, academic progress monitoring, and instructional design support. However, the use of technology must remain pedagogically oriented and should not merely follow digital trends (Cravero et al., 2024).

Meaningful learning is the main goal of integrating curriculum innovation and adaptive learning design. Meaningful learning occurs when students do not merely memorize materials, but are able to understand concepts, connect theory with real contexts, reflect on their learning, and apply knowledge in academic, professional, and social life. Therefore, this article seeks to develop a conceptual framework on the importance of integrating curriculum innovation and adaptive learning design to promote meaningful learning in higher education (du Plooy et al., 2024).

METHODS

This article uses a conceptual literature review method. This approach was chosen because the purpose of the article is to develop a conceptual framework regarding the integration of curriculum innovation and adaptive learning design to promote meaningful learning in higher education (Wang et al., 2023).

The literature used in this article consists of journal articles, systematic reviews, scoping reviews, and academic studies published within the last five years. The focus of the literature includes:

1. curriculum innovation in higher education;
2. competency-based curriculum;
3. outcome-based education;
4. adaptive learning design;
5. personalized adaptive learning;
6. student-centered learning;
7. blended learning;
8. artificial intelligence in higher education;
9. meaningful learning.

The analysis was conducted narratively by grouping the literature into three major themes: curriculum innovation, adaptive learning design, and meaningful learning. These three themes were then integrated into a conceptual model.

RESULTS AND DISCUSSION

Curriculum Innovation as the Foundation of Meaningful Learning

Curriculum innovation is the main foundation for creating meaningful learning. An innovative curriculum must be able to answer a fundamental question: what competencies should students possess after completing their education? This question is important because a curriculum that is not competency-based tends to emphasize content delivery rather than the achievement of real abilities (Ibrahim, 2024).

In higher education, curriculum innovation should be directed toward several aspects. First, the curriculum must be based on learning outcomes. Second, it must be relevant to the needs of the labor market and society. Third, it must be flexible so that students can develop their interests and potential. Fourth, it must integrate digital technology. Fifth, it must be evaluated continuously.

A competency-based curriculum requires alignment among graduate profiles, learning outcomes, course materials, learning methods, and assessment. Without such alignment, curriculum becomes only an administrative document. Therefore, curriculum innovation must be translated into real learning practices.

Adaptive Learning Design as a Pedagogical Process

Adaptive learning design is the bridge between curriculum and student learning experience. A good curriculum will not become meaningful if the learning process remains one-way, monotonous, and insensitive to student needs (Merino-Campos, 2025).

Students have different characteristics. Some students understand materials quickly, while others require more guidance. Some students learn more effectively through visuals, practice, discussion, or reflection. Therefore, lecturers need to design learning that is varied and flexible.

Adaptive learning can be implemented through several strategies:

1. **diagnostic assessment** to identify students' prior knowledge;
2. **varied learning methods**, such as discussion, case studies, projects, and simulations;
3. **formative feedback** to help students understand their learning progress;
4. **the use of LMS** to monitor learning activities and outcomes;

5. **problem-based learning** to help students understand real contexts;
6. **learning reflection** to help students evaluate their own learning process.

Through these strategies, students do not simply receive information, but actively participate in constructing knowledge.

Technology Integration in Adaptive Learning

Digital technology can strengthen adaptive learning design when used appropriately. LMS, learning analytics, artificial intelligence, learning videos, online discussion forums, and digital quizzes can help lecturers monitor students' learning processes (Ogunleye et al., 2024).

However, technology should not replace the essence of pedagogy. Technology is only a supporting tool. Lecturers remain important as learning designers, facilitators, mentors, and evaluators. For example, AI can support learning personalization, but it must still be controlled so that it does not reduce students' critical thinking skills and academic integrity (Yu et al., 2025).

Studies on AI in higher education show that AI has great potential to support learning personalization, but higher education institutions must also pay attention to policy, ethics, and human resource readiness.

Meaningful Learning as the Outcome of Curriculum and Adaptive Learning Integration

Meaningful learning is the result of a relevant curriculum and adaptive learning. Students experience meaningful learning when they are able to understand concepts, connect theory with practice, solve problems, collaborate, reflect, and apply knowledge in real contexts (Pereira et al., 2024).

Meaningful learning cannot be achieved only through lectures and memorization-based examinations. Lecturers need to create challenging, contextual, and reflective learning experiences. For example, students can be asked to solve real cases, conduct group projects, create portfolios, carry out field observations, or design solutions to social problems.

In this context, curriculum innovation and adaptive learning design complement each other. Curriculum provides the direction of competencies, while adaptive learning design provides the means for students to achieve those competencies through learning experiences that suit their needs (Tan, 2025).

Proposed Conceptual Model

The conceptual model proposed in this article can be formulated as follows:

Curriculum Innovation → Adaptive Learning Design → Meaningful Learning

The explanation is as follows:

1. Curriculum Innovation serves as the foundation that determines graduate profiles, learning outcomes, curriculum content, and assessment.
2. Adaptive Learning Design serves as the pedagogical process that adjusts learning strategies to student characteristics.
3. Meaningful Learning becomes the final outcome in the form of deep understanding, real competence, reflection, and the ability to apply knowledge in life.

This model emphasizes that meaningful learning does not emerge only from a good curriculum or sophisticated technology, but from the integration of both within an appropriate learning design.

CONCLUSION

Curriculum innovation and adaptive learning design are two important components in the transformation of higher education. An innovative curriculum provides the direction of competencies that students need to achieve, while adaptive learning design ensures that the learning process is aligned with students' needs, abilities, and characteristics.

Meaningful learning can be achieved when higher education institutions are able to integrate competency-based curriculum, outcome-based education, student-centered learning, blended learning, digital technology, formative assessment, and contextual learning experiences. Through this approach, students do not only understand theory, but are also able to apply knowledge in real-life situations.

This article concludes that the integration of curriculum innovation and adaptive learning design needs to become a strategic agenda for higher education institutions. Universities need to strengthen lecturer capacity, provide digital infrastructure, build a culture of curriculum evaluation, and ensure that technology is used to support pedagogical goals. In this way, higher education can produce graduates who are competent, adaptive, reflective, and ready to face future changes.

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