Website:https://worldsiencepub.com/index.php/Imc Volume:5,Issue 02,September-2026

A MULTILEVEL APPROACH TO IMPROVING INNOVATIVE METHODS FOR DEVELOPING STUDENTS' INDEPENDENT SELF-DEVELOPMENT

Makhmudova Darmonjon Bozorboyevna
Acting Professor, ISFT Institute
DOI:https://doi.org/10.5281/zenodo.23027264

Abstract. This article proposes a multilevel approach to improving innovative methods aimed at developing students' independent self-development, building on the logic of ecological systems theory. Unlike improvement efforts that target a single element in isolation — a platform, a single technique, an institutional policy — the article argues that sustainable improvement requires coordinated action across three interdependent levels: the individual (micro), the pedagogical-technological (meso), and the institutional (macro). For each level, characteristic limitations of current practice are identified and concrete improvement measures are proposed, illustrated through a comparative analysis of five widely used innovative methods before and after improvement. A set of level-specific evaluation indicators is also presented.

Keywords: independent self-development, multilevel improvement, ecological systems approach, heutagogy, continuous quality improvement, pedagogical technology, institutional monitoring.

Introduction

Efforts to improve innovative methods of fostering students' independent self-development frequently fail not because the methods themselves are poorly designed, but because improvement is attempted at only one level of the educational system while the surrounding levels remain unchanged. A university may modernize its digital learning platform (a technological change) without addressing how individual students relate to autonomy, or it may run motivational workshops for students without adjusting the institutional policies that reward passive compliance over initiative. Such single-level interventions tend to produce short-lived effects, because the levels of an educational system are interdependent: change at one level is absorbed or neutralized by the inertia of the others.

This observation points to the need for a genuinely multilevel approach — one that treats the individual student, the immediate pedagogical-technological environment, and the wider institutional system as parts of a single, interacting ecology, rather than as separate objects of reform. The purpose of this article is to construct such a multilevel model, to specify the characteristic problems and improvement measures at each level, and to demonstrate, through concrete comparative examples, how coordinated improvement across levels strengthens students' capacity for independent self-development.

Literature Review and Theoretical Framework

The theoretical basis of this study is U. Bronfenbrenner's ecological systems theory, which describes human development as shaped by nested, interacting systems — from the immediate microsystem surrounding the individual to broader institutional and cultural macrosystems. Applied to pedagogical improvement, this theory justifies treating the student's personal learning behavior, the concrete methods and technologies used in a course, and the institution's policies and monitoring mechanisms as three interacting levels rather than three unrelated topics.

At the individual level, S. Hase and C. Kenyon's concept of heutagogy — self-determined learning, in which the learner (not the instructor) decides what and how to learn — provides a benchmark for evaluating whether existing methods genuinely cultivate self-direction or merely simulate it. A. Bandura's work on self-efficacy further clarifies why some students disengage from ostensibly innovative methods: without a prior sense of capability, autonomy-oriented tasks can produce anxiety rather than motivation.

At the institutional level, W. E. Deming's Plan–Do–Check–Act (PDCA) cycle from quality management theory offers a rigorous alternative to ad hoc policy adjustments, framing institutional

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.

improvement as a disciplined, evidence-based loop rather than a one-time directive. Combining these three theoretical strands — ecological systems theory, heutagogy, and continuous quality improvement — yields a framework capable of addressing improvement as a coordinated, cross-level process, which is the specific contribution of the present study relative to single-level treatments of the topic in existing literature.

Research Methodology

The study is based on comparative-analytical methods: a systematic comparison of the traditional and improved application of five innovative methods currently used in higher education practice; content analysis of pedagogical literature and institutional documents describing quality-assurance procedures; and systemic modeling, used to construct the three-level improvement framework presented below.

Results and Discussion

1. Three Levels of the Ecological Improvement Model

Micro level (the individual student). At this level, the central problem is not the absence of tools for self-development but insufficient self-efficacy and unclear personal learning goals, which prevent students from using available tools autonomously. Improvement here consists of individual learning agreements negotiated between student and instructor, structured goal-setting exercises, and brief self-efficacy-building tasks preceding autonomy-demanding assignments, so that independence is introduced gradually rather than assumed from the outset.

Meso level (pedagogical-technological environment). At this level, the problem is that specific innovative methods — already adopted in practice — are configured in ways that limit their developmental potential (see the comparative table below). Improvement here means redesigning the internal logic of each method: what it rewards, what evidence of learning it requires, and how directly it connects to the student's own goals rather than to external compliance.

Macro level (institutional system). At this level, the problem is the absence of a disciplined mechanism for reviewing and updating methods once they are introduced. Improvement here applies Deming's PDCA cycle directly to pedagogical innovation: institutions plan an improvement, implement it on a limited scale, check its effects against defined indicators, and act by scaling, adjusting, or discontinuing it — repeating the cycle on a fixed institutional schedule rather than leaving renewal to individual initiative.

2. Comparative Analysis: Traditional versus Improved Application

The interdependence of the three levels becomes concrete when specific methods are examined before and after improvement. Table 1 compares five innovative methods commonly used to support independent self-development, contrasting their typical (meso-level) limitation with an improved version informed by the individual- and institutional-level measures described above.

Table 1. Traditional and improved application of selected innovative methods

Method	Typical Limitation in Practice	Improved Version
Flipped classroom	Pre-class videos watched passively; class time still dominated by lecture recap	Pre-class micro-tasks requiring a submitted artifact (question, mini-analysis); class time reserved strictly for peer problem-solving
E-portfolio	Functions as a storage archive of finished works with little self-analysis	Restructured around dated reflection entries that document reasoning, setbacks, and revised strategies, not just final products
Gamification	Points and badges reward	Progression tied to demonstrated

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.

Method	Typical Limitation in Practice	Improved Version
	task completion rather than genuine skill growth	competency levels; badges unlock optional advanced challenges chosen by the student
Microlearning modules	Fragmented content with no link between modules or connection to personal goals	Modules sequenced into a visible personal-competency map the student edits and extends
Mentoring platform	Fixed meeting schedule regardless of student need; generic advice	On-demand, data-triggered mentoring prompted by learning-analytics signals of stagnation or disengagement

As the table shows, improvement in each case does not introduce an entirely new method but redirects an existing one toward genuine self-direction — precisely the heutagogical shift described in the theoretical framework — while requiring supporting institutional mechanisms, such as learning-analytics infrastructure for the mentoring platform or competency-mapping tools for microlearning modules.

3. Indicators for Evaluating Improvement, by Level

1. **Micro-level indicators** — the number of students who set and revise their own learning goals within a term; measurable change in self-reported confidence in independent tasks;
2. **Meso-level indicators** — the proportion of submitted portfolio or project work containing genuine reflective analysis rather than description alone; frequency and specificity of feedback exchanged per assignment;
3. **Macro-level indicators** — the existence and regularity of a documented PDCA review cycle for each innovative method; the proportion of methods reviewed and updated within the past academic year;
4. **Cross-level indicator** — the persistence of students' independent self-development activity beyond the course or program in which a method was introduced, taken as evidence that improvements at all three levels have been genuinely aligned.

Conclusion

The analysis presented in this article shows that improving innovative methods for developing students' independent self-development cannot be reduced to upgrading isolated tools or techniques. Because the individual student, the pedagogical-technological environment, and the institutional system form an interdependent ecology, durable improvement requires coordinated action across all three levels: building individual self-efficacy and clear goal ownership, redesigning specific methods to reward genuine self-direction rather than compliance, and embedding a disciplined, PDCA-based review cycle at the institutional level. The comparative analysis of five widely used methods demonstrates that this reorientation is achievable without replacing existing practices, but by systematically redirecting their internal logic. Future research could apply the proposed level-specific indicators empirically, across different institutional and disciplinary contexts, to test the durability of multilevel improvement over time.

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.

References

1. Bronfenbrenner, U. The Ecology of Human Development: Experiments by Nature and Design. — Cambridge, MA: Harvard University Press.
2. Hase, S., & Kenyon, C. From Andragogy to Heutagogy. Ultibase, RMIT, 2000.
3. Bandura, A. Self-Efficacy: The Exercise of Control. — New York: W. H. Freeman.
4. Yoldoshev, J. G'., & Usmonov, S. A. Pedagogical Technologies and Pedagogical Skill. — Tashkent: O'qituvchi, 2020.

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.