

Management of Students' Self-Directed Learning in Credit-Based Higher Education: from Traditional Approaches to Digital Transformation Requirements

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ABSTRACT	ARTICLE DETAILS
Student self-directed learning has become a central component of credit-based higher education, particularly in the context of digital transformation. While many universities have shifted from year-based curricula to credit-based systems, the management of students' self-learning activities remains largely grounded in traditional administrative and instructional approaches. This paper examines the management of students' self-directed learning in credit-based higher education, highlighting the transition from conventional management models toward digitally enabled and data-driven approaches. Drawing on theoretical synthesis and analysis of current practices, the study contrasts traditional and digital management paradigms and proposes integrated managerial implications aligned with digital transformation. The findings suggest that effective management of self-directed learning requires a shift from control-oriented administration to learner-centered, technology-supported, and data-informed management models, thereby enhancing educational quality and supporting lifelong learning in higher education. KEYWORDS: self-directed learning; credit-based education; educational management; digital transformation; higher education.	Published On: 03 February 2026 Available on: https://irijsh.com/

1. INTRODUCTION

Over the past decades, higher education systems worldwide have undergone profound structural and governance reforms in response to massification, globalization, and the increasing demand for knowledge-based economies. These transformations have reshaped not only institutional missions but also curricular structures and learning models (Altbach et al., 2019). The shift from year-based curricula to credit-based higher education has fundamentally transformed teaching, learning, and academic management worldwide. Credit-based education emphasizes learner autonomy, flexibility in learning pathways, and the accumulation of learning outcomes over time. Within this framework, students' self-directed learning plays a decisive role in determining learning effectiveness and educational quality. Consequently, the management of self-directed learning has emerged as a critical issue for higher education institutions.

In practice, however, the management of students' self-learning activities in many universities continues to rely on traditional approaches characterized by administrative regulations, fixed teaching schedules, and outcome-oriented assessment. These approaches often conceptualize self-learning merely as time spent outside the classroom, rather than as a structured, supported, and continuously monitored learning process. In the context of digital transformation, such management models reveal significant limitations, particularly in terms of personalization, learner support, and the use of learning data.

Digital transformation in higher education has introduced new possibilities for managing learning processes through learning management systems (LMS), digital learning resources, and learning analytics. These technologies enable institutions to monitor learning engagement, provide timely feedback, and support students' self-regulation and autonomy. As a result, managing self-directed learning increasingly requires a paradigm shift from traditional control-based administration toward data-driven, learner-centered management.

This paper aims to (i) conceptualize students' self-directed learning within credit-based higher education, (ii) analyze traditional approaches to managing self-learning activities, (iii) examine emerging requirements for management in the context of digital

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transformation, and (iv) propose managerial implications for higher education institutions. By doing so, the study contributes to the literature on educational management and digital transformation, particularly in transitional higher education contexts.

2. MANAGEMENT OF STUDENTS' SELF-DIRECTED LEARNING IN CREDIT-BASED EDUCATION: A TRADITIONAL APPROACH

In credit-based higher education systems, self-directed learning (SDL) is not merely an individual learning behavior but a managed educational process embedded within institutional governance structures. Traditionally, the management of students' self-learning has been conceptualized as a set of administrative and pedagogical interventions aimed at organizing, guiding, monitoring, and evaluating students' independent learning activities in alignment with institutional training objectives.

From a traditional management perspective, managing SDL focuses on ensuring that students internalize appropriate learning motivations, adopt effective learning plans, and comply with academic regulations governing independent study. Universities typically emphasize awareness-raising activities to help students understand the role of self-learning in credit accumulation, competency development, and academic progression (Biggs & Tang, 2022). This management logic assumes that students' learning effectiveness largely depends on their cognitive awareness, learning attitudes, and personal discipline.

Planning is another central element of traditional SDL management. Students are encouraged, often under academic advisors' guidance, to construct semester-based learning plans that align with curriculum requirements, course learning outcomes, and assessment schedules. Such plans are expected to help students allocate time rationally, prioritize core academic tasks, and avoid fragmented or superficial learning approaches (Knowles et al., 2020).

Content management in traditional SDL primarily aims to orient students toward compulsory curriculum knowledge while allowing limited flexibility for enrichment and extension. Lecturers typically provide suggested reading lists, guided self-study tasks, and assignment frameworks to structure students' independent learning activities. Methodologically, management efforts emphasize training students in conventional learning strategies such as note-taking, summarization, analytical reading, and problem-solving, with limited attention to personalized or adaptive learning pathways.

Assessment and supervision remain predominantly outcome-oriented. Self-learning is evaluated indirectly through examinations, assignments, and course completion rather than through real-time monitoring of learning processes. Although self-assessment and reflection are encouraged rhetorically, institutional mechanisms for formative feedback on SDL remain relatively underdeveloped (Black & Wiliam, 2009).

Overall, the traditional approach to managing students' self-directed learning reflects a linear and instructor-centered logic, where management interventions are episodic, regulation-driven, and largely separated from learning analytics or technological mediation. While this model has contributed to maintaining academic order and ensuring minimum learning standards, it shows clear limitations in addressing learner diversity, learning autonomy, and scalability under contemporary higher education conditions.

3. MANAGEMENT OF STUDENTS' SELF-DIRECTED LEARNING IN THE CONTEXT OF DIGITAL TRANSFORMATION

Contemporary perspectives on higher education increasingly emphasize the active role of students in shaping their own learning processes, moving beyond passive participation toward partnership-based learning models. In this context, students are recognized as co-creators of learning experiences rather than mere recipients of instructional content (Healey et al., 2020). Digital transformation has fundamentally altered the nature of self-directed learning and, consequently, the way it is managed in higher education institutions. Unlike traditional models that emphasize control and compliance, digitally enabled SDL management increasingly adopts a learner-centered, data-informed, and process-oriented approach.

In digitally transformed learning environments, self-directed learning is embedded within learning management systems (LMS), digital repositories, and online collaborative platforms. These systems enable institutions to shift from static planning toward dynamic learning design, where students' learning trajectories can be continuously adjusted based on real-time engagement data and performance indicators (Viberg, Hatakka, Bälter, & Mavroudi, 2018). Empirical evidence suggests that the systematic use of learning analytics plays a critical role in enhancing study success by enabling early identification of learning difficulties and supporting timely, targeted academic interventions (Ifenthaler & Yau, 2020).

From a management perspective, digital transformation redefines awareness-raising activities by integrating orientation modules, online learning skill diagnostics, and digital literacy training into institutional onboarding processes. Students are not only informed about the importance of SDL but are also supported in developing competencies such as information evaluation, online collaboration, and self-regulation in digital contexts (OECD, 2021).

Planning and organization of self-learning are increasingly supported by digital tools such as personalized learning dashboards, automated scheduling systems, and competency-based learning maps. These tools allow students to visualize learning progress, identify gaps, and make evidence-based decisions about their study strategies, thereby enhancing autonomy while maintaining institutional oversight.

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Content management also undergoes significant transformation. Open educational resources (OER), digital libraries, and multimedia learning materials expand students' access to diverse knowledge sources beyond prescribed textbooks. Lecturers' roles shift from content transmitters to learning designers and facilitators who curate resources, design inquiry-based tasks, and scaffold students' independent exploration (Laurillard, 2012).

Assessment and monitoring become more formative and process-oriented through learning analytics, online quizzes, peer assessment tools, and reflective e-portfolios. These mechanisms enable institutions to monitor SDL continuously, provide timely feedback, and support early intervention for at-risk students without undermining learner autonomy (Jivet et al., 2017).

Nevertheless, digital transformation also introduces new management challenges, including data privacy concerns, unequal access to digital resources, variations in students' digital competencies, and increased demands on lecturers' pedagogical and technological capacities. As a result, managing SDL in the digital era requires not only technological infrastructure but also organizational change, professional development, and supportive institutional policies. Global monitoring reports further warn that technology integration in education must be accompanied by ethical data governance, capacity building, and equity-oriented policies in order to avoid widening digital divides and learning inequalities (UNESCO, 2023).

4. COMPARISON AND IMPLICATIONS FOR SELF-DIRECTED LEARNING MANAGEMENT

A comparative analysis of traditional and digitally transformed approaches reveals a fundamental shift in the philosophy and practice of managing students' self-directed learning. While traditional management emphasizes regulation, uniformity, and outcome control, digital-era management prioritizes adaptability, learner agency, and continuous process support.

In traditional models, management actions are largely external to learners' cognitive processes, whereas digital transformation enables management to be embedded within learning environments themselves. This integration allows institutions to balance autonomy and accountability more effectively, transforming SDL management from a supervisory function into a developmental support system.

Importantly, digital transformation does not eliminate the relevance of traditional management principles such as goal alignment, academic standards, and quality assurance. Instead, it extends and reconfigures these principles through technological mediation and data-driven decision-making. Effective SDL management in credit-based education therefore requires a hybrid approach that integrates institutional governance, pedagogical innovation, and digital infrastructure.

This transition underscores the need for universities to reconceptualize SDL management as a strategic component of educational quality assurance rather than a supplementary administrative task. Without such reconceptualization, the potential of digital transformation to enhance learner autonomy and learning effectiveness may remain underutilized.

Table 1. A comparison between the current state of self-study management and the requirements of digital transformation in higher education.

Management Dimension	Current State of Self-Directed Learning Management (Traditional Approach)	Management Requirements in the Context of Digital Transformation
Perception of self-directed learning	Self-directed learning is mainly understood as out-of-class study time associated with completing tasks assigned by lecturers	Self-directed learning is viewed as a continuous, proactive, self-regulated learning process supported by digital learning environments
Management objectives	Focus on developing awareness, study habits, and compliance with academic regulations	Development of digital self-directed learning competence, lifelong learning capacity, and learning self-management skills
Organizational approach	Administrative-level management based on plans, regulations, and direct supervision	Platform-based management integrating LMS, digital learning resources, and learning support tools
Management of learning plans	Learning plans are often formalistic, with limited monitoring and adjustment	Personalized learning plans that are continuously monitored, updated, and supported through real-time feedback
Learning content	Primarily aligned with curricula and course syllabi, with limited extension	Flexible, open learning content with diverse digital resources aligned with learners' needs and capacities
Learning methods	Heavily dependent on individual experiences of students and lecturers	Diverse digital learning approaches: blended learning, project-based learning, and online collaborative learning

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Role of lecturers	Knowledge transmission, task assignment, and control	Learning environment design, guidance, mentoring, and personalized support
Assessment and evaluation	Predominantly summative assessment; limited formative assessment	Process-oriented assessment based on learning data, enhanced self-assessment and peer assessment
Management tools	Mainly administrative documents, paper-based records, or basic academic management software	Application of LMS, learning analytics, AI-supported learning tools, and data-driven management
Supporting conditions	Traditional facilities, printed libraries, and physical self-study spaces	Digital infrastructure, digital learning resources, and digital competencies of lecturers and students
Level of personalization	Low; management based on large groups and mass classes	High; personalized and adaptive learning support
Learning continuity	Limited; difficult to track long-term learning trajectories	Integrated learning data supporting lifelong learning pathways

From the analysis of the current management of students' self-directed learning in credit-based education and its comparison with the requirements of digital transformation in higher education, a substantial gap can be identified between existing management practices and emerging demands. In many higher education institutions, the management of self-directed learning remains largely grounded in traditional approaches, whereas digital transformation necessitates a fundamental shift in management philosophy, tools, and organizational practices toward data-driven, personalized, and learner-centered management models.

This gap highlights the urgent need to design and implement management solutions for students' self-directed learning that integrate digital technologies, redefine the roles of academic managers and lecturers, and systematically develop students' digital self-directed learning competencies. Such solutions must ensure coherence, systematic implementation, and practical feasibility, while simultaneously inheriting appropriate elements of traditional management models and responding effectively to the demands of higher education in the digital era. On this basis, the following section proposes a set of management solutions for students' self-directed learning in credit-based education that are aligned with the current context of digital transformation.

4. SOLUTIONS FOR MANAGING STUDENTS' SELF-DIRECTED LEARNING IN CREDIT-BASED EDUCATION IN RESPONSE TO DIGITAL TRANSFORMATION

4.1. Innovating Management Mindsets and Models toward Data-Driven Management of Self-Directed Learning

A foundational solution for managing students' self-directed learning (SDL) in the context of digital transformation is the renewal of management thinking, shifting from an administrative, control-oriented model to a data-driven management model that supports the development of learners' self-learning capacities. Accordingly, SDL should no longer be managed solely through rigid regulations and predefined plans but should instead be continuously monitored, analyzed, and adjusted based on learning data collected throughout the educational process.

From a management perspective, higher education institutions need to establish mechanisms that integrate the management of SDL into their internal quality assurance systems, recognizing both the processes and outcomes of self-directed learning as key indicators of educational quality. From a technological perspective, the effective implementation and utilization of learning management systems (LMS), combined with learning analytics tools, enable real-time monitoring of students' engagement levels, learning progress, and self-study effectiveness. On this basis, managerial and academic support decisions can be made in a timely, accurate, and highly personalized manner. From a human perspective, lecturers and academic managers must be equipped with competencies in learning data literacy, enabling them to interpret analytical information and use it to adjust teaching strategies, academic guidance, and student advising practices. Recent systematic reviews indicate that artificial intelligence applications are increasingly being integrated into higher education management, particularly in areas such as adaptive learning systems, predictive analytics, and personalized academic advising, thereby expanding the potential of data-driven management of self-directed learning (Zawacki-Richter et al., 2019).

4.2. Developing a Digital Learning Ecosystem to Support and Promote Students' Self-Directed Learning

Effective and sustainable management of self-directed learning in credit-based education can only be achieved when it is embedded within a coherent, flexible, and accessible digital learning ecosystem. This ecosystem should encompass core components such as digital learning resources, digital libraries, online learning platforms, and tools that facilitate academic interaction.

From a management standpoint, universities need to establish standards and regulations governing the development, utilization, and sharing of digital learning resources, ensuring consistency, interoperability, and quality across learning materials. From a technological standpoint, the digitalization of curricula, the development of open educational resource repositories, and the

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implementation of blended and online learning models are essential conditions for expanding the temporal and spatial dimensions of students' self-directed learning. Digital platforms should be designed with user-centered principles, supporting personalized learning pathways and collaborative learning activities. From a human perspective, lecturers play a central role in designing learning content, guiding students in effectively utilizing digital resources, and organizing interactive learning activities, thereby enhancing both the quality and effectiveness of self-directed learning.

4.3. Enhancing Students' Digital Self-Directed Learning Competencies and Lecturers' Capacity to Organize and Support Self-Directed Learning

Beyond management structures and technological infrastructure, human factors are decisive in the success of managing self-directed learning in the context of digital transformation. Therefore, enhancing students' digital self-directed learning competencies and lecturers' capacity to organize and support SDL should be considered a central solution.

From a management perspective, higher education institutions should incorporate the development of self-directed learning competencies and digital competencies into program learning outcomes, while also establishing incentive mechanisms that encourage students to actively engage in digital learning activities. From a technological perspective, tools that support learning planning, progress tracking, self-assessment, and online feedback should be integrated into learning systems, enabling students to gradually develop habits of self-managing their learning processes. From a human perspective, lecturers need continuous professional development in active learning pedagogies, digital teaching methods, and academic advising roles, allowing them to sustainably support students' development of self-directed learning competencies.

4.4. Innovating the Assessment of Self-Directed Learning toward Process-Oriented and Personalized Evaluation

Innovating assessment practices is a critical component in managing students' self-directed learning in credit-based education under digital transformation. Assessment should not merely measure final learning outcomes but should comprehensively reflect learning processes, levels of engagement, and students' developmental progress.

From a management perspective, universities need to develop unified criteria and procedures for assessing self-directed learning, linking process-based assessment with the goals of developing SDL competencies and lifelong learning capacities. From a technological perspective, online assessment tools, learning progress tracking systems, and data analytics should be leveraged to provide timely and accurate feedback to students. From a human perspective, lecturers should shift from the role of "grade assigners" to that of "feedback providers and learning facilitators," while encouraging students to engage in self-assessment and peer assessment, thereby enhancing autonomy and responsibility in self-directed learning activities.

5. CONCLUSION AND POLICY IMPLICATIONS

5.1. Conclusion

This study approaches students' self-directed learning in credit-based education from a management perspective, situating it within the transition from traditional management approaches to the demands of digital transformation in higher education. Based on a theoretical review and an analysis of common practices across higher education institutions, the study demonstrates that self-directed learning is not merely an individual learning activity but an organized process that requires systematic management, particularly within credit-based training models where learners play a central role in the educational process.

The analysis indicates that although universities have established relatively comprehensive institutional frameworks and management mechanisms for SDL, prevailing approaches remain heavily influenced by traditional models, relying primarily on administrative regulations and direct supervision. In the context of digital transformation, these approaches reveal significant limitations, particularly in terms of insufficient personalization, the lack of data-driven tools for monitoring and adjusting learning processes, and the underutilization of digital technologies in managing and supporting learners.

By contrasting current practices with the requirements of digital transformation, the study clarifies the gaps that need to be addressed in managing students' self-directed learning. On this basis, it proposes an integrated management solution framework that connects three core pillars—management, technology, and people—aimed at transforming the management of self-directed learning from a control-oriented model to a model that supports the development of self-directed learning competencies and lifelong learning. These findings not only contribute to clarifying the theoretical foundations of managing SDL in credit-based education but also offer practical value for higher education institutions undergoing digital transformation.

5.2. Policy and Educational Management Implications

Based on the research findings, several policy and educational management implications can be drawn as follows. Beyond efficiency and effectiveness, the management of self-directed learning in higher education should be grounded in the broader public mission of universities. Digital transformation, if not carefully governed, risks reinforcing existing inequalities rather than serving the common good of society (Marginson, 2018).

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First, at the macro level, the management of students' self-directed learning should be recognized as a central component of higher education digital transformation policies. Recent international policy analyses emphasize that education systems must become more responsive, resilient, and learner-centered through data-informed governance and integrated digital strategies, particularly in the management of learning processes (OECD, 2023). Strategic documents and policy frameworks should shift decisively from a focus on "technology application in teaching" to "data-driven management of learning processes," in which students' self-directed learning activities and digital SDL competencies are regarded as key indicators of educational quality and digital transformation effectiveness.

Second, at the institutional level, universities need to renew their management mindsets by integrating the management of self-directed learning into internal quality assurance systems and overall university governance. Investments in digital infrastructure, learning management systems, and digital learning resources should be accompanied by effective, transparent, and responsible mechanisms for managing and utilizing learning data, with the aim of supporting personalized learning pathways for students.

Third, faculty development policies should prioritize enhancing lecturers' digital competencies and their capacity to organize and support self-directed learning. Lecturers are not only instructors but also designers of learning environments, academic advisors, and facilitators of students' self-directed learning processes. Accordingly, professional development programs should be closely aligned with pedagogical innovation, assessment reform, and the effective use of digital technologies in learning management.

Fourth, policies should be developed to support students in building digital self-directed learning competencies and lifelong learning capacities, particularly for student groups with limited access to digital technologies. Ensuring equity in access to digital infrastructure, learning resources, and academic support services is a critical condition for improving the effectiveness of managing self-directed learning and enhancing educational quality in the context of digital transformation.

Overall, the management of students' self-directed learning in credit-based education should be approached as a dynamic and continuously evolving process that adapts to technological advancements and the demands of a knowledge-based society. The policy implications proposed in this study may serve as valuable references for policymakers, educational managers, and higher education institutions in designing and implementing management models for self-directed learning that are responsive to the contemporary digital transformation context.

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