Research on the Construction of Self-directed Learning Platforms in Universities under Blended Learning Environment

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Abstract: With the deepening advancement of teaching modernization, higher education is accelerating its digital and intelligent transformation. Blended learning, as a new model integrating the advantages of online and offline learning, has become an important direction for teaching reform in universities. In this process, the self-directed learning platform, serving as the core support of the blended learning environment, directly impacts teaching effectiveness and talent cultivation quality through its construction quality. Based on explaining the collaborative mechanism of blended learning and the characteristics of Self-directed Learning Platforms, this paper deeply analyzes the current achievements in constructing Self-directed Learning Platforms in universities and the practical challenges such as insufficient technical support and poor resource integration. Focusing on the needs of the blended learning environment, targeted construction strategies are proposed from three dimensions: technical support, content resource development, and operational management. The aim is to provide practical guidance for the optimization and upgrading of Self-direct Learning Platforms in universities, help enhance students' self-directed learning abilities, and promote the digital transformation of higher education and innovation in teaching models.

Keywords: Blended Learning; Self-directed Learning Platform; Universities

1. Introduction

With the rapid development of information technology and the continuous deepening of educational digital transformation, the traditional teaching model primarily based on classroom lectures is facing unprecedented challenges and changes. Blended learning, as a new teaching model integrating the advantages of online digital learning and offline traditional classroom teaching[1], has gradually become an important direction for teaching reform in higher education due to its flexibility, personalization, and efficiency. In this context, self-directed learning, as a core link in enhancing students' learning abilities and cultivating lifelong learning literacy, has attracted widespread attention from educational researchers and practitioners regarding its implementation path and supporting carrier[2].

Universities bear the mission of cultivating high-quality innovative talents[3]. However, the limitations of the traditional teaching model in terms of spatiotemporal constraints, personalized teaching provision, and resource integration make it difficult to meet the diverse and personalized needs of contemporary college students[4]. In the post-pandemic

era, integrated online and offline teaching has become the norm. Relying on information technology to build efficient and high-quality Self-direct Learning Platforms, providing continuous self-directed learning support for students, is an important task for university teaching reform. The self-directed learning platform is the core support of the blended learning environment, capable of integrating teaching resources, optimizing the teaching process, and promoting the enhancement of students' self-directed learning abilities. Although some universities have explored platform construction and application, problems exist in functional design, resource quality, technical support, and operational management, affecting the application effectiveness.

Based on this, this paper will focus on the basic connotations of blended learning and Self-direct Learning Platforms, analyze the practical necessity for universities to construct such platforms, combine the current status and problems in platform construction, and propose specific construction strategies from the dimensions of technical support, content resource development, and operational management. The aim is to provide useful references for the optimization and upgrading of Self-direct Learning Platforms in universities, assisting the deep application and development of the blended learning model in the field of higher education.

2. Overview of Blended Learning and Self-direct Learning Platforms

2.1. Blended Learning

Blended learning is not simply the superposition of online and offline learning. It is a teaching model based on systematic analysis of learner characteristics, learning objectives, and teaching content, combining traditional classroom instruction and online learning platforms[5]. Traditional pure online learning relies entirely on digital platforms to complete the entire teaching process. While it can break through spatiotemporal constraints to the greatest extent, it can easily lead to reduced learning engagement and weak emotional connections due to the lack of offline interaction support. Blended learning, through a closed-loop design of "online self-directed construction + offline interactive verification," avoids the spatiotemporal constraints of traditional classrooms while compensating for the lack of teacher-student and student-student interaction in pure online learning. It better meets the dual requirements of knowledge systematicity and practical ability in higher education.

2.2. Self-directed Learning Platform

A Self-directed learning platform refers to a learning platform that integrates teaching, learning, and practice, where students are inspired by self-directed learning based on their interests and hobbies, and teachers focus on knowledge points using ability tests as a means[6]. Traditional platforms focus on resource storage, with functions concentrated on basic links such as material upload and homework submission. Interaction is primarily one-way transmission, leaning towardsserving teachers' teaching management, making it difficult to support active student learning. In contrast, platforms under the blended learning environment are learning-centered, supporting learners in self-directedly planning learning goals, selecting learning content, regulating the learning process, and evaluating learning outcomes. With the advancement of the smart education concept, platforms utilize learning analytics technology to achieve personalized resource recommendations. Based on behavioral data, they generate learner profiles and diagnostic reports to provide precise suggestions, evolving from purely tool-based platforms into smart learning hubs integrating resource integration, intelligent services, and ecological construction, directly affecting the implementation effectiveness of blended learning.

3. Analysis of the Necessity for Universities to Construct Self-direct Learning Platforms

3.1. Addressing the Spatiotemporal Limitations of Traditional Teaching

Traditional classroom-based teaching is inherently limited by fixed time slots and physical spaces. Such rigidity often

hinders students from fully accommodating their own learning rhythms, especially in cases where individual cognitive styles, knowledge foundations, or external commitments differ significantly. Self-Directed Learning Platforms, built on the foundation of networks, cloud services, and mobile technologies, provide a breakthrough solution to these limitations. Students are able to design personalized learning schedules, including flexible pre-class preview, in-depth post-class review, and fragmented learning during idle time. With ubiquitous access to cloud-based teaching resources, learners are no longer bound by the "classroom walls." Instead, they can engage with course content at any time and from any location, thereby significantly improving learning autonomy, flexibility, and continuity. This shift not only enhances convenience but also ensures that learning becomes an ongoing process rather than a time-bound event.

3.2. Adapting to the Digital Needs of the New Generation of Learners

Contemporary college students, often referred to as digital natives, have grown up in an environment rich with digital tools, online applications, and interactive technologies. Their familiarity with technology means that traditional "chalk and talk" methods no longer align with their expectations or learning preferences. Self-Directed Learning Platforms directly cater to these digital demands by integrating diverse learning content such as multimedia lectures, simulation experiments, online quizzes, and interactive modules. Through intelligent recommendation systems, the platform can analyze learners' prior performance and interests to provide tailored resources, ensuring that learning pathways are both efficient and personalized. Moreover, real-time feedback mechanisms, including automated grading, AI-based question answering, and peer evaluation, satisfy students' need for immediacy and interaction. By aligning with their pursuit of personalization and rapid response, these platforms effectively enhance intrinsic motivation, cultivate independent learning skills, and support the formation of lifelong learning habits.

3.3. Realizing the Transformation and Upgrading of Teaching Models

The traditional higher education model has long been teacher-centered, with students positioned as passive recipients of knowledge. This model, while efficient in knowledge delivery, often suppresses student initiative and critical thinking. Self-Directed Learning Platforms facilitate a paradigm shift towards student-centered teaching. Through features such as online discussion forums, collaborative project spaces, and instant Q&A sections, a multidimensional communication and interaction mechanism is established. Teachers gradually transition into the role of facilitators and mentors, guiding rather than dictating the learning process. Students, in turn, are encouraged to exercise autonomy by selecting learning content, setting personal goals, and engaging in collaborative learning tasks. This process nurtures active participation and independent problem-solving, fostering the transformation of the teaching model from passive knowledge transmission to active knowledge construction. Ultimately, such platforms help cultivate well-rounded learners equipped with higher-order thinking skills, creativity, and adaptability—competencies essential in the digital era.

3.4. Responding to the New Normal in Education

The rapid advancement of educational digitization and the challenges posed by unforeseen events such as pandemics have accelerated the integration of online and offline teaching modes. This blended model has gradually become the "new normal" in education. However, traditional face-to-face teaching struggles to maintain continuity and flexibility under such circumstances. Self-Directed Learning Platforms serve as a crucial infrastructure for ensuring educational resilience. They allow seamless switching between in-person and online teaching scenarios without compromising instructional quality. For example, during emergencies, lectures can be delivered via live streaming while discussion and assessment proceed through digital platforms, ensuring learning outcomes remain stable. Furthermore, the mature and modular functions of these platforms—such as resource management, performance tracking, and adaptive assessment—lay the technological foundation for long-term blended learning. In this sense, universities adopting such platforms are not only addressing temporary disruptions but also aligning with the irreversible trend of digital transformation in education.

3.5. Promoting Educational Equity and Resource Sharing

One of the persistent challenges in higher education is the uneven distribution of educational resources across regions and institutions. Elite universities often concentrate superior faculty, advanced facilities, and abundant teaching resources, while many institutions—especially in less developed areas—face deficiencies. Self-Directed Learning Platforms, through digitalization and interconnectivity, help bridge this divide. By enabling high-quality resources to be uploaded, shared, and distributed across different regions, these platforms dismantle barriers of geography and institutional hierarchy. Students from under-resourced universities can access the same cutting-edge courses, lectures, and learning materials as their peers in more prestigious institutions. This not only compensates for local deficiencies but also contributes to the democratization of knowledge and the promotion of educational equity. At the same time, high-quality institutions benefit by expanding their influence and strengthening their academic reputation, creating a virtuous cycle of mutual benefit. In the long run, such platforms become indispensable tools for ensuring balanced, inclusive, and sustainable development of higher education.

4. Current Status of self-directed Learning Platform Construction in Universities

4.1. Achievements

Driven by national strategies for educational informatization and digital transformation, Chinese universities have made remarkable advances in the construction of self-directed learning platforms. Over the past decade, pilot projects have gradually expanded to a nationwide scale, covering general education, specialized courses, and elective subjects. This expansion has not only increased student participation but also fostered more diversified patterns of online engagement.

From a technological perspective, the integration of cloud computing and mobile Internet technologies has greatly improved platform stability, scalability, and accessibility. Students are now able to engage in learning anytime and anywhere, which enhances continuity and flexibility in study habits. In addition, some leading universities have begun experimenting with the integration of artificial intelligence, using data-driven analytics to generate personalized learning recommendations and adaptive content delivery. These applications signal a shift toward greater learner-centeredness and highlight the increasing importance of emerging technologies in higher education reform.

4.2. Challenges

Despite progress, challenges remain under the new context of smart education. Technologically, platforms have limited support for advanced applications such as virtual simulations and immersive learning. Integration of AI, big data, and other emerging technologies into teaching scenarios is still in its infancy. Resource integration is fragmented across departments and courses, with inconsistent data standards and closed systems creating "information islands." Many resources are outdated or monotonous, failing to meet students' demand for high-quality, timely content, which restricts teaching effectiveness.

5. Construction Strategies for University Self-direct Learning Platforms under Blended Learning Environments

5.1. Technical Support

Technical support requires multidimensional collaboration. First, resource digitization is foundational: converting print materials into standardized digital formats stored in the cloud with intelligent search functions enables efficient access and seamless integration across scenarios. Second, interactive environments enhance engagement: discussion forums, live Q&A, and collaborative tools extend interaction before, during, and after class, preserving immediacy while deepening online participation. Third, intelligent support systems are key: by analyzing learning behaviors, participation, and

assessments through AI, platforms can recommend personalized learning paths, linking online supplementation with offline reinforcement for precision improvement.

5.2. Content Resource Development

Content construction should align with the needs of blended learning. First, supply must be student-centered, integrating e-books, online courses, interactive exercises, and other resources to support both systematic instruction and fragmented self-study, across formal and continuing education. Second, resource quality must be ensured by collaborating with experts and industry professionals to align content with academic standards and the latest developments. Third, multimedia should be widely applied, transforming abstract knowledge into videos, animations, and simulations, enhancing intuition and engagement. Open Educational Resources (OER) concepts should also be adopted, with co-creation communities encouraging teachers and students to share materials and build a collaborative ecosystem.

5.3. Operational Management

Effective operation requires a collaborative, data-driven management model. Universities should clarify the responsibilities of academic affairs, IT centers, teaching units, and faculty-student users, forming a coordinated mechanism for construction, application, and optimization. Dynamic updates must be implemented, regularly reviewing and refreshing course materials based on disciplinary trends and industry demands. Feedback and evaluation mechanisms should combine surveys, platform tools, and big data analysis to generate actionable reports for improvement. Long-term planning is also essential: five-year strategic roadmaps should align with emerging technologies such as AI and VR, expanding toward cross-disciplinary communities and virtual laboratories to ensure sustainable competitiveness.

6. Conclusion

Smart education has become a key direction of reform and innovation. The construction of Self-direct Learning Platforms in blended learning environments provides a new teaching and learning model of "online self-directed exploration + offline interactive deepening." Through technical empowerment and resource integration, these platforms optimize resource allocation and enhance talent cultivation.

By systematically clarifying the theoretical foundations of blended learning and self-directed platforms, analyzing current challenges, and proposing strategies in technology, resources, and management, this paper demonstrates that such platforms can break the time-space constraints of traditional teaching, meet personalized demands, stimulate learner initiative, and promote student-centered reform. Their adoption will provide strong support for the deep implementation of blended learning and the sustained digital transformation of higher education.

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References

[1] Guo C, 2022, From Regulation to Empowerment: Reconstruction of Undergraduate Teaching Management System in the Ubiquitous Learning Era. Modern Education Management, (01): 101-108.

[2] Xu W Y, Lu C Y, 2025, The Dilemma of Adult Education Liberation Empowered by Artificial Intelligence and Its Solutions. Adult Education, 45(08): 9-16.

[3] Guo G X, Zhang H S, 2024, Optimization of University Discipline and Specialty Settings to Adapt to the Development of New Quality Productivity. Journal of National Academy of Education Administration, (08): 34-42.

[4] Zhou J, Pan Y L, 2025, Teaching and Learning of Quantum Chemistry Empowered by Generative AI. Chemical Education (Chinese and English), 46(12): 97-103.

[5] Li J Y, 2024, The Construction and Application of Precision Teaching Models in Primary School Mathematics under Blended Learning Environments. Henan Education (Teacher Education), (08): 71.

[6] Li Y H, 2017, Construction of a Student-Centered Active Learning System Based on Self-directed Learning Platforms. Journal of Xingtai University, 32(04): 132-134.