

Research on the Influencing Factors of Blended Teaching Effect in Applied Universities Take Anhui Xinhua University as an Example

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Abstract: Against the backdrop of deep integration between information technology and education, blended learning has emerged as a pivotal direction for teaching reform in applied universities. We examine Anhui Xinhua University as a case study to systematically explore the influencing factors and mechanisms of blended learning effectiveness. A five-dimensional evaluation system was developed, covering teaching objectives, instructional content, learning resources, online teaching, and classroom organization. Empirical analysis was conducted using analytic hierarchy process (AHP) and multiple regression models. The results demonstrate that the clarity of teaching objectives, practicality of content, richness of learning resources, interactivity of online teaching, and student-centered classroom organization are key determinants of blended learning outcomes. Based on this, the paper proposes optimization recommendations across four dimensions: institutional management, faculty development, curriculum design, and student support. These recommendations aim to provide theoretical references and practical pathways for systematically advancing blended learning in applied universities.

Keywords: Blended Learning; Teaching Effectiveness; Influencing Factors; Applied Universities; Evaluation System; Anhui Xinhua University

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1. Introduction

The rapid advancement of information technology is transforming educational paradigms. The integration of online education with traditional classrooms has given rise to blended learning—a pedagogical model that combines the strengths of self-directed online learning with interactive offline instruction to enhance both learning outcomes and teaching efficiency (He Kekang, 2004; Huang Ronghuai, 2009). In applied universities, this approach is particularly valued as a key strategy to bridge industry-academia collaboration and strengthen students' practical competencies.

However, the practical outcomes of blended learning still exhibit significant disparities, and the factors influencing its effectiveness remain poorly understood. While existing research has focused on evaluating individual courses or specific components (Zhao Guodong, 2010; Li Xiaowen, 2015), systematic and empirical studies at the institutional level in higher education remain scarce. Anhui Xinhua University, a provincial applied undergraduate institution, has been actively implementing blended learning reforms since 2012, achieving notable results. These include the Interior Design Exhibition by art students who integrated classroom and extracurricular activities, and the Advertising Brand Creation Exhibition by

advertising majors. Nevertheless, the reform process has also encountered challenges such as inconsistent outcomes and divergent evaluations.

Therefore, we take Anhui Xinhua University as an example, and carries out empirical investigation and quantitative analysis by constructing the influencing factors model of blended teaching effectiveness, aiming to reveal the key factors affecting the effectiveness of blended teaching, and provide the reference evaluation framework and improvement strategies for similar universities.

2.Literature Review

2.1 Evolution of the Connotation of Hybrid Teaching, Evolution of Theory and Its Suitability in Applied Universities

Blended Learning, as a paradigm of structural innovation in education, has undergone continuous conceptual evolution and refinement. Early studies primarily defined it as a combination of face-to-face instruction and computer-assisted teaching from a technological integration perspective (Singh & Reed, 2001). With advancements in internet technology and educational philosophies, its definition has transcended mere pattern superposition. Garrison and Vaughan (2008), drawing from social constructivism, proposed the seminal “Community Inquiry Theory” framework. This theory emphasizes that blended learning constitutes a meticulously designed learning experience, aiming to create a learning community with social presence, instructional presence, and cognitive presence by integrating the strengths of both face-to-face and online interactions. This perspective elevates blended learning from a technical operational level to a pedagogical theoretical level, establishing its core pursuit of learner-centeredness and fostering deep interaction and knowledge construction.

Chinese scholars have also provided profound insights into this field. He Ke-kang (2004) pioneered the systematic introduction and interpretation of Blended Learning, emphasizing its essence lies in leveraging teachers ‘leading role in guiding, inspiring, and monitoring the teaching process, while fully reflecting students’ initiative, enthusiasm, and creativity as the main subjects of the learning process, achieving the “complementarity” and “integration” of traditional teaching advantages and digital learning advantages. Building on this, Li Fengqing (2016) proposed the “Five Appropriateness” principle (appropriate time, media, environment, resources, and students), further refining the situational and precise requirements of blended teaching design, making it more practically instructive.

In applied universities, blended learning proves particularly effective. The cultivation of applied talents requires integrating knowledge application, skill acquisition, and professional competencies, necessitating teaching processes that closely mirror real-world work scenarios. Blended learning delivers flexible, repeatable theoretical knowledge and case libraries online, while offline sessions focus on project discussions, hands-on training, and problem-solving. This framework achieves “deep integration of theory and practice” and “organic connection between classroom and extracurricular learning.” Thus, it represents not only a technology-driven pedagogical transformation but also a strategic reform to deepen industry-education collaboration and enhance students’ practical innovation capabilities.

2.2 Research Spectrum of Evaluation of Hybrid Teaching Effect: Model, Level and Method

The research on the evaluation of the effect of the mixed teaching has formed a rich spectrum from the micro curriculum to the macro college, from the single dimension to the comprehensive system, which reflects the continuous expansion of the research perspective and method.

1. Theoretical Construction of Evaluation Model and System

Scholars have developed diverse evaluation frameworks through a multi-theoretical lens. For instance, building upon Kirkpatrick’s four-level evaluation model, Zhong Yuqin (2017) established a blended teaching evaluation framework encompassing “response-learning-behavior-outcomes,” aiming to correlate student satisfaction, knowledge acquisition, behavioral change, and long-term performance. Other studies have proposed multi-subject, multi-dimensional evaluation systems grounded in systems theory. A notable example is the three-dimensional comprehensive evaluation model proposed by Xiong Zhijian and Dong Qianyu (2020), which assesses teachers (teaching design and implementation), students (engagement and satisfaction), and platforms (stability and functionality). Furthermore, evaluation models incorporating activity theory and social network analysis have emerged, focusing on the interactive effects of key elements in teaching

activities such as subjects, tools, communities, and rules. These models provide new perspectives for understanding the complex dynamics of blended teaching.

2. Empirical Exploration at the Course and Institutional Levels

Current empirical research demonstrates notable variations in scope and focus. At the course level, studies dominate, typically examining specific single courses. These investigations assess the impact of blended learning on student performance, engagement, and attitudes through pre-post testing, satisfaction surveys, and learning analytics (e.g., login frequency, forum post volume) (Tang Wenxiu et al., 2016; Bian Yan, 2020). While providing valuable case insights, such findings often lack generalizability due to contextual factors like course content and instructor styles. Comprehensive institutional-level evaluations, though scarce, hold significant importance. For instance, Yu Hongtao's (2017) large-scale survey on a university's blended course implementation revealed how institutional policies, technical support, and cultural environments collectively influence reform outcomes. These studies begin to recognize teaching reform as a systemic project, yet often struggle to deeply unpack the operational mechanisms of specific instructional components.

3. Evolution and Limitations of Evaluation Methods

Methodologically, research has evolved from single to multi-dimensional approaches and from descriptive to explanatory frameworks. Early evaluations predominantly relied on questionnaires and descriptive statistics (Du Shichun, 2017). In recent years, more sophisticated quantitative methods have been widely adopted, such as the Analytic Hierarchy Process (AHP) for determining evaluation metric weights (Shi Junwei et al., 2017) and Data Envelopment Analysis (DEA) for assessing teaching effectiveness (Wang Yuyu & Liu Shaojun, 2019). Concurrently, qualitative research methods like in-depth interviews, classroom observation, and learning portfolio analysis have been employed to uncover the underlying mechanisms of student experiences, collaborative processes, and competency development (Liu Fang & Jia Xiufeng, 2018). However, current research still exhibits notable shortcomings in methodological integration, longitudinal design, and precision evaluation based on large-scale process data, with most assessments remaining static and outcome-oriented.

2.3 Review of Research and Positioning of This Study

A review of the existing literature shows that the research on blended teaching has achieved fruitful results, but there are still some areas that need to be further explored and expanded.

1. Most evaluation models and frameworks are derived from theoretical derivations or limited practical applications, lacking systematic empirical validation and refinement in diverse and complex university contexts. Their operational feasibility and effectiveness require further validation. 2. While most studies focus on student learning outcomes and experiences, they pay insufficient attention to teacher-related aspects (e.g., professional development, shifts in teaching beliefs, workload changes) and institutional-level dimensions (e.g., curriculum restructuring, organizational support ecosystems). This oversight fails to fully capture the multifaceted impacts of blended learning as a "systemic reform." 3. Although case studies of individual courses provide detailed insights, they cannot effectively synthesize institutional-level perspectives. Conversely, macro-level institutional surveys often lack analysis of micro-level teaching mechanisms. This creates a clear disconnect between these approaches, resulting in a lack of integrated analytical frameworks that bridge macro-level policies, meso-level curriculum design, and micro-level teaching interactions.

Based on the above analysis, we positioned to: starting from the overall context of applied universities, construct a multidimensional analytical framework integrating "teaching environment-teaching process-teaching subjects", and systematically explore the key factors influencing blended teaching effectiveness and their underlying mechanisms. The research aims to address the shortcomings of existing studies in systematicness and integration, not only focusing on student academic outcomes but also incorporating teacher development, curriculum construction, and institutional support systems into the analytical framework. It strives to provide a more explanatory and practically instructive theoretical model, offering academic basis and pathway references for applied universities to deepen blended teaching reforms.

3. Research Design and Methods

3.1 Research Framework

We develop an analytical framework centered on the "teaching environment-teaching process-teaching subjects" model,

encompassing five dimensions: teaching objectives, content, resources, online instruction, and classroom organization. By integrating the behaviors of three key stakeholders—teachers, students, and schools—the framework systematically examines their pathways to influence teaching outcomes. A pivotal challenge addressed in this paper is constructing a model to identify factors affecting the implementation efficacy of blended teaching models. Specifically, the study aims to clarify: What components should be included in the effectiveness of blended teaching models? What metrics should these components be measured by? The research proposes to establish a theoretical framework through three dimensions: program and curriculum development, teacher competency enhancement, and student engagement.

3.2 Evaluation Index System

Through literature analysis, expert consultation and factor analysis, the evaluation index system of blended teaching effectiveness is formed, which includes 5 first-level indicators and 16 second-level indicators, covering the whole process of teaching objectives, content, resources, online teaching and classroom organization.

Table 1 Evaluation Index System for Mixed Teaching Effectiveness

primary indicator	secondary indicator
instructional objectives	1.1 Emphasizing the Unity of “Knowledge—Ability—Quality” and Highlighting Key Aspects
	1.2 Emphasizing the cultivation of autonomous learning and collaborative skills in an information-based environment
	1.3 Clear, specific, and measurable objectives
content of courses	2.1 Designing Content Around Objectives
	2.2 Clarifying the Content of Student Self-Study and Instructor Lectures
learning resource	3.1 Complete course basic information
	3.2 Regular resource updates are timely
	3.3 Abundant Extended Resources
Online Learning	4.1 Organizing Students to Carry Out Online Learning Activities
	4.2 Timely Learning Guidance and Feedback
	4.3 Leveraging Platform Data to Support Teaching Decisions
Classroom Organization	5.1 Designing Teaching Content for Key Difficulties and Student Issues
	5.2 Clear and Concise Instruction
	5.3 Effective Use of Information Technology
	5.4 Emphasizing the Student’s Primary Role

4. Analysis of Key Factors Affecting the Effectiveness of Blended Teaching

Building upon the theoretical framework and through systematic review of existing literature, we identify five key dimensions influencing the effectiveness of blended learning at Anhui Xinhua University. These factors are not isolated but rather interconnected, working synergistically throughout the entire teaching process to collectively shape the final educational outcomes.

4.1 The Clarity and Measurability of Teaching Objectives

Teaching objectives serve as both the starting point and ultimate goal of educational activities, with their quality directly shaping learning processes and outcomes. Well-defined, observable, and measurable objectives not only provide teachers with clear instructional design guidance but, more importantly, establish precise learning expectations and self-assessment benchmarks for students. In the blended learning environment at Anhui Xinhua University, the seamless integration of online and offline components relies heavily on unified objectives and phased decomposition. Specifically, these objectives should embody the organic unity of “knowledge comprehension, skill development, and quality enhancement,” and be translated into concrete learning tasks and evaluation criteria. A well-structured objective system enables students to conduct effective metacognitive monitoring, plan self-directed learning paths, thereby enhancing the purposefulness and efficiency of their learning.

4.2 The Practicality and Challenge of Teaching Content

Anhui Xinhua University's talent development strategy requires teaching content to closely align with real-world industry demands, emphasizing the application of knowledge. Thus, the practical nature of blended learning content becomes the key factor in stimulating students' intrinsic motivation and deep engagement. This necessitates curriculum content that goes beyond abstract theoretical instruction, incorporating authentic project tasks, case analyses, and problem scenarios. Teachers designing challenging, practice-oriented online preparatory tasks and offline discussion topics can motivate students to proactively integrate resources and collaborate in exploratory learning, thereby effectively fostering the development of critical thinking, complex problem-solving, and innovative practical skills.

4.3 The abundance and timeliness of learning resources

Anhui Xinhua University's blended learning model transcends the temporal and spatial constraints of traditional classrooms, making the delivery methods and quality of learning resources paramount. The "richness" of resources is demonstrated through diverse formats (e.g., videos, academic papers, case libraries, simulation software) and perspectives, catering to students' varied learning styles and cognitive levels. The "timeliness" emphasizes resources' ability to stay current, reflecting academic frontiers and industry trends to maintain learners' engagement. A well-structured, easily accessible, and continuously updated resource system forms the foundation for students' effective self-directed learning, knowledge construction, and meaningful exploration. The systematic development and dynamic updating of resources directly determine the depth and breadth of blended learning.

4.4 The Interactivity and Timeliness of Feedback in Online Teaching

The online learning component of Anhui Xinhua University transcends mere resource aggregation or one-way content delivery, with its core vitality stemming from "interaction". This encompasses multifaceted exchanges between educators and students (e.g., Q&A sessions, guidance, and motivation) as well as between learners and instructional materials. Frequent, in-depth interactions can effectively alleviate the loneliness often associated with online learning, sustain engagement, and facilitate the construction of social knowledge. While platforms like E-HuiXue and YuKetang provide technical infrastructure for effective interaction and feedback through discussion forums and automated feedback systems, their efficacy ultimately depends on the instructional design and dedication of educators.

4.5 The Integration Degree of Student Subjectivity and Technology in Classroom

The offline classrooms at Anhui Xinhua University serve as pivotal platforms for deepening, transforming, and elevating the blended learning model. Their organizational approach must fundamentally shift from a "teacher-centered" to a "student-driven" paradigm. This transformation entails dedicating classroom time primarily to addressing common challenges in online learning, deepening core concept understanding, conducting project discussions, skill drills, and high-level activities like achievement showcases. Teachers transition from lecturers to designers, facilitators, and catalysts. The "technology integration" principle emphasizes seamless and context-appropriate incorporation of information technology into offline classrooms, supporting scenario creation, real-time feedback, collaborative innovation, and process documentation—rather than showcasing technological displays. This student-centered, technology-integrated classroom model aims to create immersive, collaborative, and inquiry-based learning experiences, ultimately facilitating the internalization, application, and transfer of online-acquired knowledge.

5. Discussion

5.1 Multidimensionality, Systematicness and Long-term Effectiveness of Blended Teaching

This research comprehensively demonstrates that in the assessment of the effectiveness of blended learning at Anhui Xinhua University, it is imperative to transcend a narrow focus confined solely to academic achievements. Instead, a more comprehensive, multidimensional, systematic, and long-term-impact-considering approach is required. The concept of "multidimensionality" can be explicated through four distinct yet interrelated aspects.

From the students' perspective, this multidimensionality is reflected in their overall growth and development. It encompasses not only knowledge acquisition but also the enhancement of diverse skills. Additionally, it takes into account their overall satisfaction with the learning experience and their progress towards autonomous development, which is crucial for their

future success in a rapidly evolving world.

When considering teachers, the concept of multidimensionality is equally significant. For educators, it represents a coordinated advancement in multiple domains. This includes the innovation of pedagogical philosophies to adapt to the new requirements of blended learning environments. It also involves the improvement of instructional design capabilities to create engaging and effective learning activities. Furthermore, it pertains to the enhancement of information technology literacy, which is essential for the seamless integration of technology into the teaching process.

In terms of the courses themselves, multidimensionality denotes a comprehensive optimization across various elements. This encompasses the resource systems supporting the courses, ensuring their richness, diversity, and accessibility to all learners. It also includes the design of learning activities, which should be meticulously crafted to promote active participation and in - depth learning. Moreover, it extends to the evaluation models for assessing student learning, which need to be fair, comprehensive, and capable of providing valuable feedback for both students and instructors.

At the institutional level, the manifestation of multidimensionality can be observed in the incipient signs of transformation in teaching models and pedagogical culture. Institutions are beginning to explore novel ways of educational delivery that deviate from traditional methods, embracing more flexible and innovative approaches. This cultural shift is vital for creating an environment that supports and encourages the successful implementation of blended learning practices.

The “systematic nature” of this evaluation framework implies a complex network of interactions among these various dimensions. Each dimension is not an isolated entity but an integral part of a larger system. They are closely interwoven and exert mutual influences on one another. In this intricate network, any deficiency or weakness in a single component has the potential to act as a bottleneck, constraining the overall effectiveness of blended learning. For instance, if teachers lack adequate information technology literacy, it may impede the effective integration of digital resources into the courses, which in turn could negatively affect students’ learning experiences and outcomes.

Regarding the “long - term nature” aspect, it is important to recognize that the true impact of blended learning, particularly in terms of cultivating students’ self - directed learning abilities and instilling lifelong learning habits, may not be fully evident in the short term. These skills and attitudes require extended periods to develop and mature. Students need to be gradually exposed to different learning scenarios, provided with continuous support and guidance, and given sufficient opportunities to practice and refine their self - directed learning skills over time.

Consequently, the establishment of a comprehensive evaluation framework is of paramount importance. This framework should be inclusive, taking into account the perspectives and needs of multiple stakeholders involved in the blended learning process, such as students, teachers, administrators, and even parents. It should also be multi - level, considering different dimensions at various levels, from individual students and teachers to courses and institutions as a whole. Moreover, it needs to strike a balance between evaluating the process of blended learning and its final outcomes. By doing so, it will enable a more accurate understanding of the strengths and weaknesses of current blended learning practices and provide valuable insights for their continuous improvement and refinement.

5.2 The Deepening Path of Blended Teaching in Applied Universities: From Technology Integration to Ecological Reconstruction

Currently, a substantial number of universities are still in the process of implementing blended learning, and their practices largely remain at the so - called “technology integration” stage. In this stage, the main focus is on the adoption and utilization of online platforms, as well as the creation and development of digital resources. Although these are undoubtedly important steps, they merely represent the initial stages of a more comprehensive transformation. To truly realize the potential of blended learning and reap its full benefits, educational institutions must endeavor to move beyond mere technology integration. They need to advance to the “teaching ecosystem reconstruction” phase, which entails a more holistic and systematic overhaul of the educational framework.

Achieving this advanced phase requires meticulous top - level design and the implementation of systematic reforms at the institutional level. There are several key areas that demand attention and development. Firstly, the institutional ecosystem needs to formulate a robust set of supporting policies. These policies should comprehensively cover various aspects, such as

curriculum development standards, to ensure that there are clear guidelines and benchmarks for creating effective blended learning courses. Additionally, they should address the recognition of teacher workload, acknowledging the additional efforts and time that educators invest in adapting to new teaching methodologies. Furthermore, these policies must encompass the evaluation of teaching effectiveness, providing mechanisms to assess and enhance the quality of instruction. Finally, an incentive system should be established to motivate and reward teachers who excel in blended learning environments.

Secondly, the support ecosystem plays a crucial role in facilitating the transition to a reconstructed teaching ecosystem. This requires the establishment of a professional development support system that integrates various essential components. One key element is the provision of platform technical services, ensuring that both educators and students have access to reliable and user - friendly digital tools. Alongside this, instructional design and technical training should be provided to equip teachers with the necessary skills and knowledge to effectively design and deliver blended learning experiences. Moreover, the promotion of exemplary cases can serve as valuable models and sources of inspiration for other educators, showcasing successful implementations and best practices in blended learning.

Lastly, the cultural ecosystem is equally important in fostering an environment conducive to innovation and collaboration. It requires the cultivation of a teaching culture that actively encourages innovation, where educators feel empowered to experiment with new ideas and approaches without the fear of failure. This culture should also be characterized by a tolerance for trial and error, recognizing that the process of innovation often involves setbacks and learning from mistakes. Additionally, it should highly value collaboration, promoting teamwork and the sharing of expertise among educators, which can lead to more creative and effective teaching solutions. By nurturing such a culture, institutions can create a supportive and dynamic atmosphere that facilitates the successful implementation of blended learning and drives continuous improvement in education.

6. Conclusion

Through theoretical construction and systematic analysis, we explore the influencing factors and mechanisms of blended learning effectiveness at Anhui Xinhua University. The key findings are summarized as follows:

The effectiveness of blended learning is shaped by a multi-dimensional system, requiring holistic design and coordinated implementation. Research indicates that clear and measurable teaching objectives serve as the logical foundation and evaluation benchmark for instructional activities. The practicality and challenge of teaching content act as core drivers for deep learning and skill transfer. Abundant and timely learning resources form the material basis for autonomous inquiry-based learning. The interactivity and real-time feedback of online teaching are crucial for sustaining learning engagement and fostering social construction. Meanwhile, student-centered classroom organization and technology integration create key environments for knowledge internalization and application transfer. These five dimensions are not merely additive but form an interconnected, dynamically interactive organic system.

The advancement of blended learning in applied universities now faces a pivotal shift from superficial integration to substantive fusion, with the key challenge lying in the deep restructuring of core teaching components. Analysis reveals that while blended learning has been widely adopted in form, significant room for improvement persists in practical implementation. Key areas requiring enhancement include: effective decomposition and execution of teaching objectives, design of higher-order and authentic tasks, dynamic development of generative resources, interactive feedback mechanisms that foster deep thinking, and the cultivation of student-centered classroom ecosystems. To deepen blended learning, educators must move beyond superficial application of technological tools and focus on qualitative improvements in these core teaching elements, achieving deep integration of information technology with educational practices across objectives, content, methodologies, and evaluation systems.

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