Factors Inuencing The Second-Classroom Curriculum On Academic Performance At University, China: A Literature Review

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Abstract.
The second-classroom curriculum, encompassing all structured learning activities outside the formal academic program, is recognized as a crucial component of holistic education in Chinese universities. Despite its potential to enhance student competencies, many institutions report declining academic outcomes. This literature review synthesizes existing research to analyze key factors influencing the effectiveness of the second-classroom curriculum on academic performance in Chinese higher education. Through systematic analysis of recent scholarly work, four primary factors are identified: curriculum flexibility and design, learning environment resources, teachers' feedback and assessment, and student learning styles. The review further explores student engagement as a critical mediating mechanism through which these factors impact academic performance. Findings reveal that challenges including rigid curriculum structures, inadequate resources, inconsistent feedback, and mismatched learning styles hinder the potential benefits of second-classroom initiatives. A significant research gap exists in the lack of integrated models positioning student engagement as the central mediating variable within China's unique cultural context. This review concludes that future empirical research should test this proposed mediation model to provide actionable insights for optimizing second-classroom curricula to address declining academic achievement.

Keyword: *second-classroom curriculum, academic performance, student engagement, Chinese higher education and curriculum flexibility.*

I. INTRODUCTION

In the global landscape of higher education, universities increasingly recognize their mission extends beyond transmitting specialized knowledge to fostering well-rounded, innovative, and adaptable graduates (Li, 2024). In China, this comprehensive approach is formally articulated through the "second classroom" concept. Distinct from the first classroom—the traditional, credit-bearing, subject-specific curriculum—the second classroom encompasses structured student activities outside the formal academic program, including student clubs, interest groups, academic competitions, volunteer services, internships, and arts and sports activities, all aimed at developing students' practical skills, social competencies, moral character, and overall employability (Wang & Han, 2022)..

The theoretical significance of the second classroom roots in experiential and constructivist learning theories, which posit that knowledge and skills deepen through active participation and real-world application (Dewey, 1938). Despite research highlighting the importance of co-curricular activities in enhancing academic performance globally (Silva et al., 2020; Spătărelu, 2020), their implementation in China faces distinctive challenges. Empirical data indicates troubling academic performance declines in some Asian contexts, from 29.5% in 2020 to 17.2% in 2024, which scholars attribute to educational ecosystem issues, including insufficient second-classroom curriculum (Bao et al., 2023; Meng et al., 2024). At institutions like Shandong Huayu University of Technology, poor academic performance has been linked to low student engagement, limited learning environment resources, and insufficient teacher feedback—all facets of the second-classroom experience (Shang et al., 2023).

While research exists on curriculum design and teaching methods (Hattie, 2009; Ding, 2018), significant gaps persist. Existing studies often examine factors influencing academic success in isolation, such as socioeconomic background, institutional resources (Hoferichter et al., 2021; Munir et al., 2023), or general second-classroom concepts. However, a synthesized understanding of the specific mechanisms through which second-classroom curriculum factors—including flexibility, resources, and associated feedback—influence academic performance remains underdeveloped. The influencing mechanisms lack clarification, and the mediating role of student participation remains insufficiently explored (Kuh, 2001), restricting effective educational strategy development.

This literature review therefore aims to synthesize and critically evaluate existing research to address these questions:1. What key second-classroom curriculum factors influence academic performance in Chinese universities?2. How does student engagement potentially mediate between these factors and academic performance?3. What gaps exist in current literature, and what should future studies focus on?

By structuring discussion around selected papers, their instruments, and findings, this review provides a foundational framework for understanding second-classroom dynamics in China and sets the stage for future empirical investigation.

II. DISCUSSION ON SELECTED PAPERS

This section systematically reviews and synthesizes key studies related to factors influencing the second-classroom curriculum. Selected papers are categorized in Table I, providing an overview of research focus, methodology, context, and key findings. Subsequent discussion organizes these findings into thematic analyses.

Table 1

Summary Of Selected Research On Factors Influencing The Second-Classroom Curriculum

Author (s) & Year	Research Focus	Methodology	Context	Key Findings
Bao et al. (2023)	Educational quality & performance decline	Statistical Analysis	Asian Region	Identified performance decline (29.5% to 17.2%) linked to inadequate feedback, learning materials, and second-classroom curriculum
Chen et al. (2024)	Resource constraints in curriculum implementation	Qualitative Case Study	Chinese Universities	Highlighted challenges providing sufficient resources (technology, textbooks) during new curriculum implementation
Datu et al. (2024)	Diversity and differentiated instruction	Literature Review	Global Classrooms	Diverse student populations necessitate differentiated instruction and individualized attention in flexible curricula
Li et al. (2023)	Learning environment resources	Survey Research	Chinese Universities	Lack of resources leads to abstract teaching and low student engagement, negatively impacting learning capabilities
Rao & Meo (2020)	Curriculum flexibility for diverse learners	Theoretical Paper	General Education	Increasing student diversity demands flexible curriculum adapting to different capabilities and needs
Wang & Han (2022)	Technology access in flexible learning	Mixed Methods	Chinese Higher Education	Flexible learning depends on technology; unequal access creates student barriers
Xue et al. (2023)	Classroom management & feedback	Experimental Survey	Chinese Universities	Constructive feedback improves self-efficacy and performance; diverse learner management presents challenges
Yu et al. (2023)	Second classroom curriculum flexibility	Case Study	Chinese Universities	Identified challenges balancing flexibility/standardization, assessment alignment, and change resistance

A. Brief Explanations of Each Study and Thematic Discussion

The studies summarized in Table I collectively illuminate a complex network of factors determining second-classroom curriculum efficacy. These factors group into four primary themes, with student engagement emerging as a critical mediator.

Curriculum Flexibility and Design

The second classroom's design and inherent flexibility are foundational to its success. Theoretically, flexible curricula are paramount for catering to diverse learning styles, paces, and interests (Rao & Meo, 2016). However, Chinese context implementation presents significant challenges. Yu et al. (2023) specifically studied second-classroom curriculum flexibility in Chinese universities, identifying core tensions between standardization needs and adaptation imperatives. Their research highlights "striking a balance between flexibility and standardization" as a major institutional hurdle.

This challenge compounds with rapid educational and technological evolution. As Wang and Han (2022) note, while flexible curricula must adapt to new research and technologies, their implementation often relies on technology itself, creating a paradoxical situation where the flexibility enabler can exacerbate inequalities. Furthermore, Datu et al. (2024) emphasize that second classrooms inevitably contain students with varying academic levels, learning disabilities, and cultural backgrounds, necessitating differentiated instruction. The difficulty of providing individualized attention at scale while maintaining coherent curriculum structure leads to curriculum overload and student frustration, ultimately hindering academic performance (Bao et al., 2023).

Learning Environment Resources

Learning environment resource availability and quality are repeatedly cited as critical factors directly linked to teaching and learning effectiveness. Li et al. (2023) state unequivocally that resource absence or inadequacy causes lecturers to "handle subjects abstractly, portraying them as dry and unexciting." This lack directly impacts students, leading to low engagement and failed subject matter connections (Wang, 2023).

The problem intensifies during new or second-classroom curriculum implementation. Chen et al. (2024) found universities face significant challenges providing sufficient technology, textbooks, and specialized materials crucial for hands-on, experiential learning that the second classroom promotes. The consequence, as Zhao et al. (2024) note, is a performance gap: "universities where lecturers utilize more learning environment resources outperform those where lecturers do not." This creates a vicious cycle where insufficient resources lead to poor teaching and low engagement, which diminishes academic performance, potentially justifying future resource constraints (Shen et al., 2023). This research collectively suggests that without adequate, high-quality resources, the second classroom cannot fulfill its potential, regardless of curriculum design quality.

Teachers' Feedback and Assessment

Lecturer feedback and assessment practices are crucial within second-classroom contexts. Research consistently shows regular, timely, constructive feedback powerfully drives academic improvement (Du & Chang, 2023; Moyo et al., 2023). Xue et al. (2023) elaborate that constructive, evaluative, and corrective feedback significantly enhances student self-efficacy—their success belief—a key academic performance predictor.

However, Chinese-context studies identify systemic barriers preventing this ideal feedback loop. Lecturers often lack freedom to contribute substantial learning due to strict second-classroom curriculum policies, allowing little room for extra classes or tailored support (Wang & Han, 2022). Furthermore, course curriculum and examination quality inconsistencies cripple lecturer creativity and consistent, meaningful feedback provision (Chen et al., 2024). Students perceive this quality feedback lack, challenging their acquisition of substantial knowledge and skills needed to excel (Chen et al., 2024). Therefore, "teachers' feedback assessment" involves not merely feedback provision but deep institutional policy and standardization intertwinement that can stifle the very interactions making the second classroom effective.

Student Learning Styles and Engagement

The fourth factor involves learner characteristics. Poor academic performance often links to challenges regarding student learning styles, including reflective learning lack, inadequate interactions, and limited expression freedom (Zheng & Xiao, 2023). These issues reduce student motivation, self-monitoring, and self-reinforcement, creating passive learning dispositions ill-suited to second classrooms' active, participatory nature.

Here, Student Engagement emerges as the critical mediator. Student engagement is defined as "the extent and intensity with which students participate in and apply themselves to learning and other school activities" (Nusair et al., 2024). It constitutes the vital link between institutional factors (curriculum, resources, feedback) and ultimate academic performance outcomes. For instance, rigid curriculum (Factor 1) and abstract teaching from poor resources (Factor 2) breed boredom and passivity. Inconsistent feedback (Factor 3) fails to motivate or guide. The consequence is low engagement, manifesting as poor participation, interaction, and collaboration (Liu et al., 2023; Pan & Yao, 2023).

As Lei and Lin (2022) argue, understanding constructive learning processes and their significance in Chinese educational institutions remains limited. A pronounced research gap exists in explicitly connecting learning styles and other second-classroom factors to academic performance through student engagement mechanisms. Most engagement studies occur in Western contexts (Pawlak & Csizér, 2022; Hui & Sue-Chan, 2023), with findings not necessarily generalizable to China's more collectivist, instructor-centered culture. Therefore, second classroom influencing factors' relationship with academic performance remains inadequately explained without positioning student engagement as the central mediating variable.

B. Instruments

This field's research employs diverse methodologies and instruments, reflecting topic complexity.Quantitative Surveys:Many studies (e.g., Li et al., 2023; Xue et al., 2023) utilize Likert-scale questionnaires measuring curriculum flexibility, resource availability, feedback quality, and engagement level perceptions. These instruments enable statistical relationship testing across large samples.Qualitative Methods: Case studies (e.g., Yu et al., 2023; Chen et al., 2024) and interviews provide rich, contextual insights into specific university challenges. These methods help understand the "how" and "why" behind statistical trends, like change resistance reasons or specific resource constraint manifestations.

Statistical Analysis of Institutional Data:Studies like Bao et al. (2023) and Meng et al. (2024) analyze existing institutional performance record data, providing macro-level trend and decline evidence.Literature Reviews and Theoretical Papers:Works by Rao and Meo (2020) and Datu et al. (2024) synthesize existing knowledge to build theoretical frameworks and propose new field directions, emphasizing adaptable, inclusive curriculum design needs.

Instrument variety underscores the need for mixed-methods approaches in future empirical work to fully capture the second-classroom ecosystem's multifaceted nature.

C. Future Studies

This review identifies several critical research avenues:

1. Empirical Testing of Integrated Mediation Model: The primary gap is empirical study lack testing models where student engagement mediates between second-classroom factors (flexibility, resources, feedback) and academic performance. Future research should employ structural equation modeling (SEM) or similar techniques to validate this proposed model within Chinese universities, specifically targeting institutions like Shandong Huayu University of Technology where problems are pronounced.
2. Development and Validation of Context-Specific Instruments:** Robust, context-specific scale development and validation is needed for measuring second-classroom curriculum flexibility, lecturer informal setting feedback practices, and co-curricular activity student engagement within Chinese higher education.
3. Longitudinal and Intervention-Based Studies: Most current research is cross-sectional. Longitudinal studies are needed to trace causal relationships between factors over time. Furthermore, intervention-based research designing and testing specific strategies (e.g., second-classroom activity feedback teacher training programs, resource allocation pilot projects) would provide actionable administrator evidence.
4. Cross-Cultural Comparative Studies: Research comparing second classroom student engagement mediating effects between Chinese universities and other cultural settings (e.g., North America, Europe) would help isolate cultural and institutional factor unique impacts, leading to more culturally sensitive, effective policy recommendations.

III. CONCLUSIONS

This comprehensive literature review has systematically synthesized and critically evaluated a body of research to construct an integrative framework for understanding the determinants of second-classroom curriculum effectiveness in the unique context of Chinese higher education. The analysis moves beyond a simplistic listing of influential factors to propose a dynamic, interconnected model. It reveals that academic performance is not a direct product of isolated elements, but rather the outcome of a complex ecosystem where four key institutional and instructional factors—Curriculum Flexibility and Design, Learning Environment Resources, Teachers' Feedback and Assessment, and Student Learning Styles—interact to create a learning environment that either fosters or inhibits success. The challenges observed within this ecosystem, such as rigid curricular structures that stifle innovation, resource constraints that render teaching abstract, inconsistent feedback that fails to guide, and pedagogical approaches that mismatch student needs, collectively create a barrier to realizing the full potential of the second classroom.

The paramount finding that emerges from this synthesis is the identification of Student Engagement as the pivotal mediating mechanism—the central linchpin—that binds these factors together and translates their quality into tangible academic outcomes. Student engagement is not merely an independent variable co-existing with others; it is the critical conduit through which the other factors exert their influence. A rigid curriculum does not, in itself, lower a student's grade on an exam; rather, it erodes their behavioral engagement by reducing active participation and attendance. Inadequate resources do not directly cause knowledge gaps; instead, they diminish emotional engagement by fostering boredom and a perception of irrelevance. Inconsistent or low-quality feedback does not immediately alter a student's inherent ability; rather, it weakens cognitive engagement by failing to motivate and provide a clear roadmap for improvement, thereby reducing students' self-efficacy and metacognitive strategies. Therefore, the widely reported decline in academic performance metrics in some Chinese institutions can be reinterpreted as a symptom of a broader malaise: a systemic failure to cultivate a second-classroom ecosystem that actively promotes and sustains deep, multidimensional student engagement.

The theoretical implication of this review is profound. It necessitates a shift from linear, cause-effect models to a more nuanced, process-oriented understanding. This review formally proposes a new Integrated Mediation Model of Second-Classroom Effectiveness, which positions student engagement as the core mediator. This model offers a more powerful explanatory framework for understanding why well-intentioned initiatives often fail: they may address one factor in isolation without considering its ultimate impact on the crucial intermediary variable—engagement. For instance, investing in new technology (a resource) without training teachers to use it in pedagogically sound ways (a feedback and training issue) may have minimal effect on engagement. This model thus provides a holistic lens for future research, urging scholars to examine not just direct effects, but the intricate pathways and interactions that define the educational process.

Derived from this theoretical model, the practical implications are both clear and urgent. They demand nothing short of a paradigm shift in how university administrators, policymakers, and educators conceptualize and operationalize the second classroom. It must be elevated from its often-peripheral status as a mere "add-on" or a checklist of activities to a central, strategically managed component of the institutional mission. This requires integrated, multi-pronged interventions that simultaneously target all key areas with the explicit, overarching goal of enhancing student engagement.

For Curriculum Designers and Administrators: The focus must shift from standardization to strategic flexibility. This involves developing modular curricula that offer authentic choices, allowing for student co-creation where possible, and aligning second-classroom activities with broader learning outcomes. Assessment methods must also be diversified to value the process and competencies gained, not just the final product.For University Leadership: Strategic and sustained investment in high-quality, accessible learning environment resources is non-negotiable. This goes beyond procuring technology to include creating inviting physical spaces for collaboration, ensuring reliable access to digital tools and materials, and providing funding for student-led projects. Resource allocation must be viewed as a direct investment in student engagement.For Faculty and Instructors: There must be a concerted effort to empower teachers through ongoing professional development. Training should focus on crafting constructive, timely, and personalized

feedback and on developing facilitative (rather than purely directive) teaching skills suitable for the diverse and often informal settings of the second classroom. Institutional policies should reward and recognize this form of mentorship.The ultimate success of these individual efforts hinges on their integration and their shared focus on systematically enhancing the levels of behavioral, emotional, and cognitive student engagement.

To this end, future research must move beyond correlation and description to establish causation and validate the proposed model. The highest priority is the empirical testing of the mediation model using advanced statistical techniques like Structural Equation Modeling (SEM). This would quantify the strength of the relationships and confirm the mediating role of engagement. Furthermore, longitudinal studies are crucial to trace the evolution of engagement and its outcomes over time, providing insights into the long-term impacts of second-classroom experiences. Qualitative, in-depth case studies of institutions that have successfully improved engagement can yield rich, contextual insights into effective strategies and implementation challenges. Finally, cross-cultural comparative research could illuminate how cultural factors specific to China shape the manifestation and drivers of student engagement, leading to more culturally attuned and effective interventions.

In conclusion, by re-envisioning the second classroom through the lens of this integrated model, Chinese universities can transform it from a potential source of frustration and underperformance into a powerful engine for holistic student development. Harnessing its full potential is not merely an educational enhancement but a strategic imperative for cultivating the innovative, adaptable, and well-rounded graduates who will thrive in and shape the future.

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