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Evaluating the quality of hybrid learning in higher education: stakeholder perspectives from a Chinese university

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In the contemporary era of rapid technological advancements, hybrid learning has become a significant educational model, particularly in higher education institutions. This study investigates how administrators, teachers, and students in a Chinese university evaluate hybrid learning across nine domains: leadership and management, staffing profile and professional development, review and improvement, resources, student information and support, student experience, curriculum design, assessment and integrity, and learning outcomes. A cross-sectional survey was administered online to 341 respondents (60 administrators, 70 teachers, and 211 students). Descriptive statistics summarized ratings, while the Kruskal–Wallis test examined group differences. Findings show administrators rated hybrid learning most favorably (mean = 3.02), followed by teachers (mean = 2.84) and students (mean = 2.59) on a 4-point scale. Significant differences ($p < 0.05$) emerged across all domains. Significant differences were observed among the groups, particularly in technological competency, institutional readiness, and hybrid learning quality, with students indicating lower satisfaction in leadership (mean score of 2.49) and staffing (mean score of 2.57). Despite these discrepancies, most respondents rated hybrid learning as high across the majority of domains. The study concludes that, while hybrid learning at the university meets essential quality indicators, further enhancements are necessary to address disparities and optimize overall learning outcomes.

KEYWORDS

hybrid learning, digital education, higher education quality, learning outcomes, stakeholder perceptions, technology-enhanced learning, institutional readiness, quality assurance

Introduction

The rapid advancement of science and technology has ushered society into the information age, profoundly transforming everyday life and reshaping educational paradigms. Integrating information technology into education has enabled the development of networked, digital, and lifelong learning systems—fostering knowledge societies and supporting the cultivation of innovative learners. Among the three primary modes of knowledge acquisition—classroom instruction, online learning, and self-study—the Internet has emerged as a significant medium for higher education students (Liu, 2013). Online learning, in particular, offers flexibility, interactivity, and access to diverse resources, making it a powerful complement to traditional instruction (Wang, 2020). While multiple modalities such as e-learning, blended, and hybrid models have been adopted, the physical classroom remains pedagogically valuable. Hybrid learning, which integrates face-to-face and online instruction, extends traditional classroom practice by creating more inclusive and dynamic learning experiences (King and Arnold, 2012).

Hybrid learning supports differentiated instruction and encourages student autonomy, critical thinking, and engagement (Xiao, 2016). By offering flexible, self-paced environments, it enables learners to manage their own progress more effectively. The COVID-19 pandemic accelerated the adoption of hybrid modalities, disrupting conventional teaching and prompting a global reassessment of how to evaluate and sustain quality in hybrid learning systems (UNESCO IBE, 2023).

Despite its growing adoption, the evaluation of hybrid learning quality remains underdeveloped. Educational quality is often measured by learning outcomes and student achievement (International Institute for Educational Planning-UNESCO, 2011). However, the evaluation of hybrid learning quality remains underdeveloped. Debates persist regarding how to assess online learning, which differs fundamentally from face-to-face instruction. Since hybrid learning incorporates both online and offline components, its evaluation must consider the distinct contributions of each. The Higher Education Accreditation Council has highlighted the importance of reliable and valid performance metrics for assessing quality in online education (Weiger, 1998). Effective quality assurance in hybrid learning requires well-defined indicators. Learning effectiveness is multidimensional and should be evaluated using a range of quantitative and qualitative measures. Prior studies have assessed distance learning quality through student outcomes (Ni, 2013; Costreie, 2011) and institutional staff perceptions (Yeung, 2001). To maximize the potential of hybrid learning and support pedagogical innovation, institutions must adopt rigorous and context-sensitive evaluation frameworks. In response, the Asia-Pacific Economic Cooperation (2017) developed a “Quality Assurance of Online Learning Toolkit,” outlining nine domains for evaluating hybrid learning: (1) leadership and management, (2) staffing and professional development, (3) review and improvement, (4) resources, (5) student information and support, (6) student experience, (7) curriculum design, (8) assessment and integrity, and (9) learning outcomes. These domains capture both operational and pedagogical dimensions of hybrid learning and provide a structured foundation for institutional evaluation.

In China, hybrid learning has gained national attention, particularly following the release of the National Medium- and Long-Term Educational Reform and Development Plan (2010–2020) (Ministry of Education of the People’s Republic of China, 2010). Government policy has promoted deeper integration of information technology in higher education. Nevertheless, most studies in the Chinese context rely on teacher-led investigations, which may introduce bias and fail to capture the perspectives of other stakeholders. As a result, key factors influencing hybrid learning quality remain underexplored, and existing evaluation models lack generalizability.

This study addresses these gaps by evaluating the perceived quality of hybrid learning from the perspectives of three key stakeholder groups: administrators, teachers, and students. As primary actors in the hybrid learning ecosystem, their views provide critical insight into institutional readiness, instructional practice, and learner experience. Specifically, the study explores the following research questions: (1) How do administrators, teachers, and students perceive the quality of hybrid learning? (2) Are there significant differences among these groups in the quality of hybrid learning? This study adopts the Asia-Pacific Economic Cooperation (APEC) framework as its evaluation benchmark and situates the analysis

within the Chinese higher education context. In this study, *hybrid learning in higher education* is defined as the deliberate integration of on-campus and online learning experiences, supported by institutional strategies, digital infrastructure, and pedagogical innovations. Within the context of the participating Chinese university, hybrid learning has been positioned as a pathway toward more flexible, resilient, and inclusive education in line with national modernization goals. However, questions remain regarding how its quality is perceived across different stakeholder groups—particularly administrators, teachers, and students—who engage with the system from diverse perspectives and roles. This study therefore examines and compares these perceptions across nine domains of hybrid learning quality, identifying statistically significant differences and exploring their implications for practice. Addressing these differences is critical for sustaining quality and equity in hybrid delivery; potential solutions include strengthening leadership and management mechanisms, ensuring targeted professional development, enhancing transparency in quality assurance processes, and improving access to student support services. Section 1 introduces the study, while Section 2 reviews related literature. Section 3 outlines the research methodology, Section 4 presents and interprets the results, and Section 5 concludes with recommendations for institutional policy and practice.

Literature review

Hybrid learning in higher education

Hybrid learning—combining face-to-face and online instruction—has gained global traction as a flexible model for delivering quality education in the digital era (Zhao and Yuan, 2010). In higher education, it offers adaptability, resource optimization, and the potential for more personalized learning experiences (Amaechi et al., 2022a; Amaechi et al., 2022b; Zhao and Yuan, 2010). The COVID-19 pandemic accelerated its adoption worldwide, prompting educators to explore models that ensure continuity while addressing diverse learner needs (Li et al., 2017).

In the Asia-Pacific region, hybrid learning has been implemented with varying degrees of institutional preparedness, influenced by technological infrastructure, faculty readiness, and policy support (Amaechi et al., 2022a; Amaechi et al., 2022b; Wang et al., 2015). Studies in multiple contexts have highlighted the importance of aligning institutional strategy with pedagogical design, integrating student support systems, and ensuring quality through regular review (Amaechi et al., 2022a; Amaechi et al., 2022b).

Lessons from Chinese higher education

China’s approach to hybrid learning emphasizes the integration of “Internet+” platforms for centralized resource management, large-scale teacher training combining pedagogy and platform-specific skills, and the use of data analytics to monitor engagement and academic integrity. National strategies align hybrid learning initiatives with long-term educational reforms, ensuring policy coherence and sustainability (Li et al., 2017). These experiences provide valuable insights for institutions seeking to implement hybrid models at scale.

Comparative insights and research gaps

Existing literature reveals three main gaps

First, much of the research evaluates hybrid learning from the teacher’s perspective alone, limiting insights into student and administrator experiences. Second, while studies describe institutional readiness and platform adoption, few apply a structured, multi-domain quality framework to evaluate hybrid learning in a Chinese university context. Third, cross-comparative analyses between hybrid learning and other teaching models are often limited to broad effectiveness claims rather than specific quality domains.

Addressing these gaps, this study evaluates hybrid learning quality at Southwest Medical University using the Asia-Pacific Economic Cooperation (APEC) Quality Assurance of Online Learning Toolkit (Asia-Pacific Economic Cooperation, 2017). It incorporates administrator, teacher, and student perspectives, providing a multi-stakeholder view that is less common in existing research.

Summary of related studies

Table 1 consolidates findings from selected global and Chinese studies on hybrid learning in higher education. It integrates methodologies, key parameters, comparative aspects with other teaching models, and documented benefits. This synthesis positions the present study within the broader discourse and highlights how its multi-stakeholder, framework-based evaluation contributes a distinct perspective.

Theoretical framework

This study is grounded in the Asia-Pacific Economic Cooperation (APEC) Quality Assurance of Online Learning Toolkit (Asia-Pacific Economic Cooperation, 2017), which offers a comprehensive framework for evaluating hybrid learning across nine domains: leadership and management, staffing and professional development, review and improvement, resources, student information and support,

TABLE 1 Summary of selected studies, key parameters, comparisons, and benefits of hybrid learning in higher education.

Context and Methodology	Tools/Platforms used	Key parameters and aspects (incl. Chinese context)	Comparison with other models	Benefits/Applications	Reference
Literature synthesis on hybrid pedagogy in China	LMS, MOOCs, “Internet+” platforms	Teacher guidance + student autonomy; Integration of online/offline	More interactive than pure online; more flexible than traditional	Balances autonomy and structured learning	Ge and Wang (2020)
Conceptual analysis	Mobile + offline + online integration	“Internet+” era adaptability	More technologically versatile than traditional blended	Expands access, supports mobile learning	Feng (2012)
Strategy alignment framework	Learning strategy tools	Timing, tool selection, learner alignment	Adds personalization absent in lecture models	Optimizes outcomes via tailored strategies	Huang et al. (2009)
Case studies in Chinese universities	Cloud LMS, analytics	Institutional foundation, system design, process, evaluation	Holistic approach vs. fragmented models	Enhances scalability and quality monitoring	Qu and Wang (2017)
Data-driven behavior monitoring	Learning analytics, LMS	Procrastination, plagiarism control	More proactive than traditional supervision	Improves engagement, reduces misconduct	Han and Wang (2020)
Institutional reform framework	Policy + platform integration	Top-down adoption stages	Focuses on maturity vs. ad-hoc models	Supports sustainable transformation	Porter (2014)
Case study – British Open University	Moodle + synchronous tools	Hybrid teacher roles	Hybrid-specific vs. online-only training	Strengthens faculty readiness	Comas-Quinn (2011)
Survey of student readiness	LMS, mobile tools	Self-directed learning, time mgmt.	Hybrid fosters more autonomy than trad.	Predicts engagement and satisfaction	Cheon et al. (2012)
Systematic review and annotated bibliography	Global hybrid/online tools	Institutional strategies, staff support, assessment, student engagement, pedagogical design	Global synthesis vs. single-country/local studies	Guides cross-cultural implementation and institutional planning	Amaechi et al. (2022a)
Systematic review & annotated bibliography (group learning focus)	Group-learning modalities in HEAs	Collaborative learning roles, facilitation, assessment, adaptation	Group-learning approaches vs. lecture-centric/solo online models	Strengthens resilience and inclusivity via structured collaboration	Amaechi et al. (2022b)
Comparative study	VR, LMS, MOOC	Immersive hybrid vs. standard	Higher engagement and retention rates	Expands experiential learning	Gbobaniyi et al. (2023)

student experience, curriculum design, assessment and integrity, and learning outcomes. These domains encompass the operational, pedagogical, and experiential dimensions essential to assessing hybrid learning quality (Figure 1).

Two complementary theories strengthen the conceptual foundation. Systems Theory views hybrid learning as an interconnected system in which institutional policies, teaching strategies, technological infrastructure, and learner engagement interact dynamically to influence outcomes (von Bertalanffy, 1968). Stakeholder Theory emphasizes integrating the perspectives of administrators, teachers, and students—the primary actors whose experiences and perceptions shape and reflect the overall quality of hybrid delivery (2010). Together, these frameworks guide both the evaluation design and interpretation of findings in this study.

Methods

This study employed a descriptive-comparative research design to assess the perceived quality of hybrid learning among key stakeholders. The research was conducted at Southwest Medical University, a comprehensive higher education institution located in Sichuan Province, China. Established in 1951, the university employs 1,328 full-time faculty members and serves over 20,000 students, including

undergraduates, postgraduates, and international learners. The institution offers a wide array of academic disciplines, with particular strengths in medicine, management, law, and education. It places a strong emphasis on educational quality assurance and has established a dedicated teaching evaluation center to support continuous instructional improvement.

The study involved three respondent groups: administrators, teachers, and students. Slovin’s formula was used to determine the appropriate sample sizes for the teacher and student groups, while a complete enumeration was applied for the administrator group due to its smaller population. To ensure representativeness across stakeholder groups, stratified random sampling was employed. The inclusion criteria were as follows: administrators were selected from departments directly involved in the implementation of hybrid learning; teachers were those actively teaching in departments that had adopted hybrid learning as a regular instructional approach; and students were drawn from fourth-year programs within these departments, as first- and third-year students typically have limited exposure to hybrid learning, and fifth-year students are generally engaged in internships. See Table 2 for the distribution of the samples.

Data were collected using a structured survey questionnaire administered via the Questionnaire Star online platform. The instrument comprised a preface and four main sections, covering nine domains of hybrid learning quality as outlined by Asia-Pacific

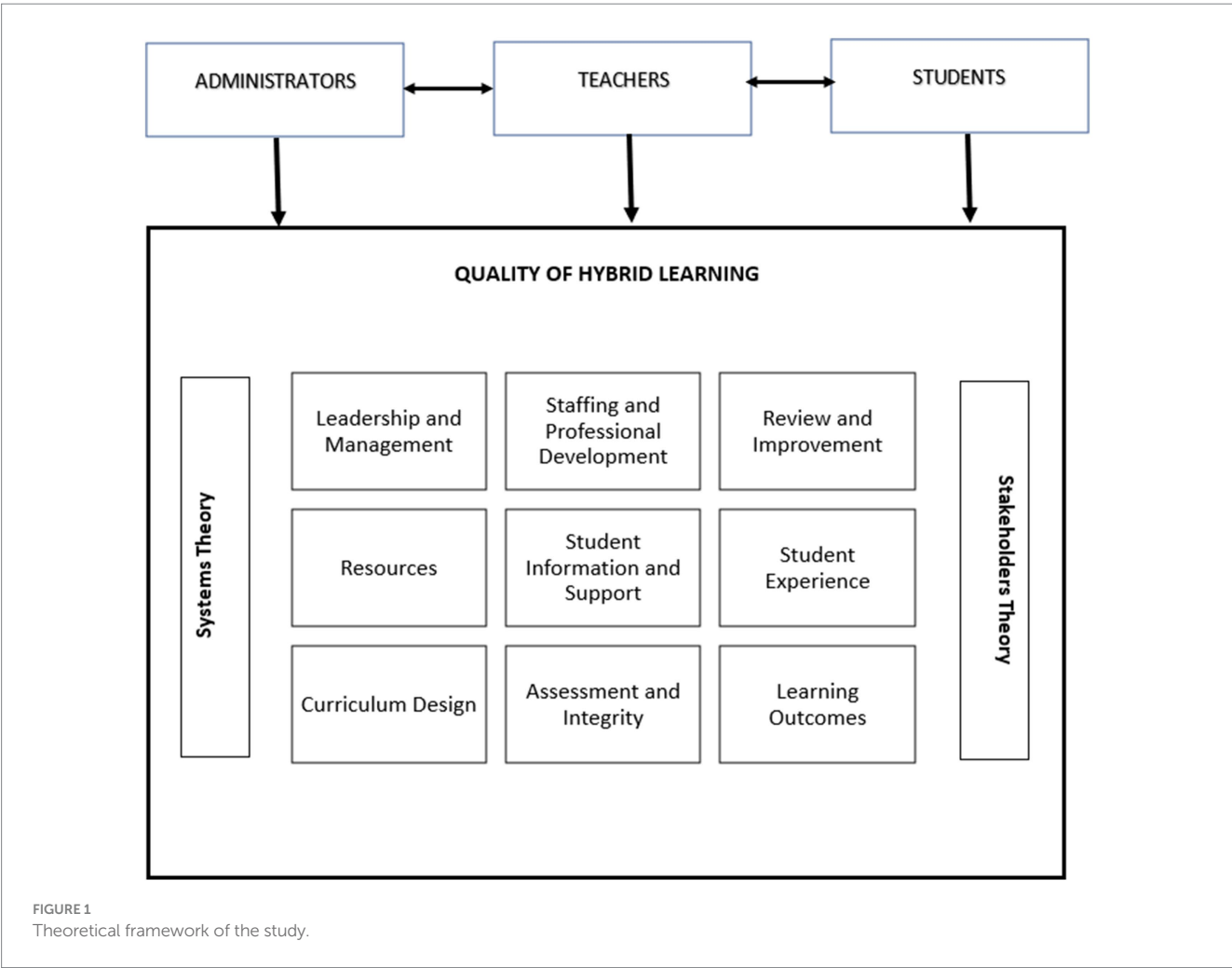


FIGURE 1
Theoretical framework of the study.

TABLE 2 Respondents sample size.

Groups of respondents	Total population	Total sample size using Slovin's formula
Administrators	75	75
Teachers	316	73
Students	937	216
Total	1,328	364

Economic Cooperation (2017): (1) leadership and management, (2) staffing profile and professional development, (3) review and improvement, (4) resources, (5) student information and support, (6) student experience, (7) curriculum design, (8) assessment and integrity, and (9) learning outcomes. Responses were recorded using a Likert scale.

To validate the reliability of the instrument, a pilot test was conducted with a sample of 40 participants (10 administrators, 10 teachers, and 20 students). The instrument achieved a Cronbach's alpha of 0.979, indicating excellent internal consistency and high reliability, making it suitable for further statistical analysis.

The research protocol adhered to ethical standards set by the Silliman University Research and Ethics Committee (UREC) and received formal approval from the Ethics Committee of Southwest Medical University (SWMU).

Results and discussion

Quality of hybrid learning

Table 3 presents the perceived quality of hybrid learning from the perspective of administrator-respondents. The overall weighted mean is 3.02, corresponding to the descriptor “High.” The standard deviation is below 1, indicating consistency in responses. Across the nine quality domains, weighted means range from 2.50 to 3.24—within the “High” category—including leadership and management, staffing profile and professional development, review and improvement, resources, student information and support, student experience, curriculum design, assessment and integrity, and learning outcomes.

Of particular note is the indicator “more developed review and development mechanism” under the domain of review and improvement, which scored a weighted mean of 3.85—categorized as “Very High.” All other indicators fall within the “High” range.

This finding suggests that administrators perceive hybrid learning to meet essential quality benchmarks, particularly in areas where institutional leadership and quality monitoring are prominent. Their elevated perspective may stem from their comprehensive understanding of institutional processes and systems. While the quality is generally high, further enhancement is necessary to reach optimal effectiveness and institutional maturity.

Table 4 summarizes teachers' perceptions. The overall weighted mean is 2.84, also within the “High” category, with standard deviations below 1 indicating relative consensus. Each of the nine domains yielded scores between 2.67 and 2.85, consistently within the high range. This indicates that teachers regard hybrid learning as

TABLE 3 Perceived hybrid learning quality by the administrators.

Criteria	WX	s	VD
Leadership and management	2.98	0.56	H
Staffing profile and professional development	3.01	0.54	H
Review and improvement	2.96	0.58	H
Resources	2.97	0.52	H
Student information and support	2.93	0.54	H
Student experience	2.98	0.55	H
Curriculum design	3.02	0.54	H
Assessment and integrity	2.92	0.58	H
Learning outcomes	2.97	0.59	H
Overall	3.02	0.45	H

1.00–1.74 = Very Low (VL); 1.75–2.49 = Low (L); 2.50–3.24 = High (H); 3.25–4.00 = Very High (VH).

TABLE 4 Perceived hybrid learning quality by the teachers.

Criteria	WX	s	VD
Leadership and management	2.67	0.80	H
Staffing profile and professional development	2.72	0.77	H
Review and improvement	2.79	0.75	H
Resources	2.82	0.76	H
Student information and support	2.81	0.72	H
Student experience	2.83	0.76	H
Curriculum design	2.83	0.78	H
Assessment and integrity	2.78	0.79	H
Learning outcomes	2.85	0.81	H
Overall	2.84	0.70	H

1.00–1.74 = Very Low (VL); 1.75–2.49 = Low (L); 2.50–3.24 = High (H); 3.25–4.00 = Very High (VH).

satisfactory, with room for improvement. Teachers' proximity to the instructional process allows for nuanced insights, balancing their direct interaction with students and their professional development needs. As **Wu (2023)** suggests, teachers offer valuable feedback due to their dual role as implementers and observers of instructional quality, integrating both qualitative and quantitative perspectives in their evaluation.

Table 5 presents student-respondents' ratings of hybrid learning. The overall weighted mean is 2.59, still within the “High” descriptor, but comparatively lower than those of administrators and teachers.

TABLE 5 Perceived hybrid learning quality by the students.

Criteria	WX	s	VD
Leadership and management	2.49	0.75	L
Staffing profile and professional development	2.57	0.76	H
Review and improvement	2.56	0.75	H
Resources	2.60	0.78	H
Student information and support	2.53	0.76	H
Student experience	2.54	0.78	H
Curriculum design	2.54	0.77	H
Assessment and integrity	2.56	0.74	H
Learning outcomes	2.54	0.76	H
Overall	2.59	0.69	H

1.00–1.74 = Very Low (VL); 1.75–2.49 = Low(L); 2.50–3.24 = High(H); 3.25–4.00 = Very High (VH).

Seven of the nine domains scored within the high range, while two domains—leadership and management (2.49) and staffing profile and professional development (2.57)—received lower scores, with leadership and management falling into the “Low” category.

Further analysis reveals that six specific indicators—related to online teaching staff, management bodies, module clarity, training, technical support teams, and student support mechanisms—were rated “Low” by students. These indicators span the domains of leadership and management, staffing and professional development, and student information and support.

These findings reflect perceived deficiencies in the institutional and instructional infrastructure supporting students in hybrid environments. Although students generally acknowledge the quality of the learning experience itself, they express concerns regarding the availability of support structures and the adequacy of instructional delivery. These concerns are consistent with existing literature emphasizing the importance of student readiness and support in hybrid contexts (So and Brush, 2008). Therefore, improvement plans should not be limited to administrative or teaching staff but should also directly engage students to enhance their hybrid learning experience.

The consolidated results, shown in Figure 2, 3, from administrators, teachers, and students indicate an overall “High” rating for hybrid learning quality across all groups. However, perceptual gaps exist, particularly in how students view institutional leadership and instructional support. These gaps warrant targeted interventions.

The evaluation model applied in this study aligns with the Context-Input-Process-Product (CIPP) framework (Madaus, 2000), emphasizing the use of multi-stakeholder feedback for quality improvement. Prior research supports the need to diversify evaluation indicators by incorporating platform usability, instructional design, and student engagement metrics (Xie, 2020; Wang, 2016). Using the Asia-Pacific Economic Cooperation (2017)

nine-domain framework allowed for a comprehensive assessment that will guide the development of data-informed training and support programs. These efforts will prioritize domains and indicators that received lower ratings, particularly from the student group.

Quality difference among the three groups of respondents

Figure 4 presents the results of the Kruskal–Wallis test, which examined whether statistically significant differences exist in the perceived quality of hybrid learning among administrators, teachers, and students. The analysis revealed significant differences across all nine domains and the overall quality rating ($p < 0.05$).

As shown in Figure 4, administrators consistently rated hybrid learning more favorably than teachers and students, while students provided the lowest ratings in all domains. The most pronounced gaps were observed in *Curriculum Design*, *Leadership and Management*. Based on mean ranks, administrator-respondents consistently evaluated hybrid learning more favorably than teachers and students. Teachers also rated quality higher than students across most domains. These findings suggest perceptual gaps among the groups, likely influenced by differing levels of involvement, expectations, and access to institutional resources.

Leadership and management

Administrators and teachers rated this domain as “High,” while students rated it “Low.” Significant differences emerged between all three groups. Students expressed concerns about the adequacy of staffing, the presence of strategic plans for hybrid learning, and the existence of dedicated management units. Administrators, due to their leadership roles and systemic oversight (Lin, 2015), likely had a more favorable view of institutional capacity in this area.

Staffing profile and professional development

All three groups rated this domain as “High,” yet significant differences exist, particularly between administrators and both teachers and students. The differences may reflect administrators’ broader awareness of ongoing staff development initiatives. Notably, students rated two indicators low: the adequacy of staff training and the availability of technical support teams. These findings emphasize the need for visible, student-facing improvements in professional development strategies, consistent with the goals outlined in The Modernization of Education in China 2035.

Review and improvement

While all groups rated this domain as “High,” administrators assigned significantly higher scores than students. This gap suggests that institutional mechanisms for quality assurance and feedback, although present, may not be sufficiently transparent or impactful from the students’ perspective. As Li (2023) emphasized, a robust review and improvement process is essential for sustainable educational quality.

Resources. All groups rated the availability of resources as “High.” However, administrators again provided higher ratings than students. This may be attributed to students’ limited ability to fully utilize digital resources—an issue commonly cited in hybrid learning literature

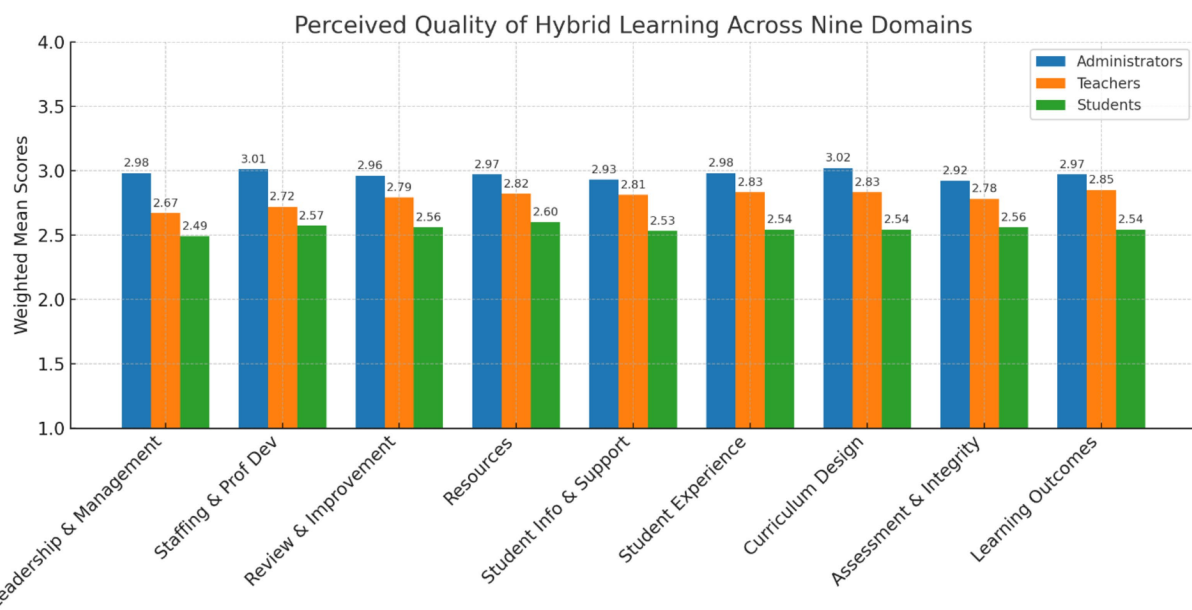


FIGURE 2

Bar chart of the weighted means for the perceived quality of hybrid learning across nine domains among administrators, teachers, and students.

(Gao, 2022). Addressing digital literacy and providing more intuitive access to resources may improve student perceptions.

Student information and support

All three groups rated this domain as high, but students scored it significantly lower than administrators and faculty. This points to a mismatch between institutional intent and student experience—for example, help pages that are hard to find, slow or generic advisories, unclear who to contact for tech or academic issues, and limited triage for counselling or financial aid. A student-centered redesign should add proactive supports, just-in-time help, and warm referrals delivered where and when students actually need them (Shaikh et al., 2022; Muljana and Luo, 2019; Li et al., 2017).

Student experience

Student experience was rated “High” across all groups, yet significant differences remain. Administrators and teachers rated the domain more favorably than students, possibly due to their indirect observations. Nevertheless, students’ high ratings across all indicators suggest a generally positive learning experience, despite reservations in other domains (Li, 2020).

Curriculum design

All three groups provided “High” ratings, with administrators and teachers scoring this domain significantly higher than students. This suggests that while students appreciate the coherence and pedagogical focus of hybrid curriculum design, they may not fully perceive its strategic alignment with learning outcomes. Zhu (2022) emphasized that curriculum coherence and progression are central to hybrid learning reform.

Assessment and integrity

This domain was uniformly rated as “High,” though students again provided the lowest scores. Despite this, students responded positively

to indicators such as the alignment of hybrid assessment data with examination board reviews. These findings point to a need for clearer communication of assessment practices, in line with evolving evaluation frameworks in China (Lin, 2023).

Learning outcomes

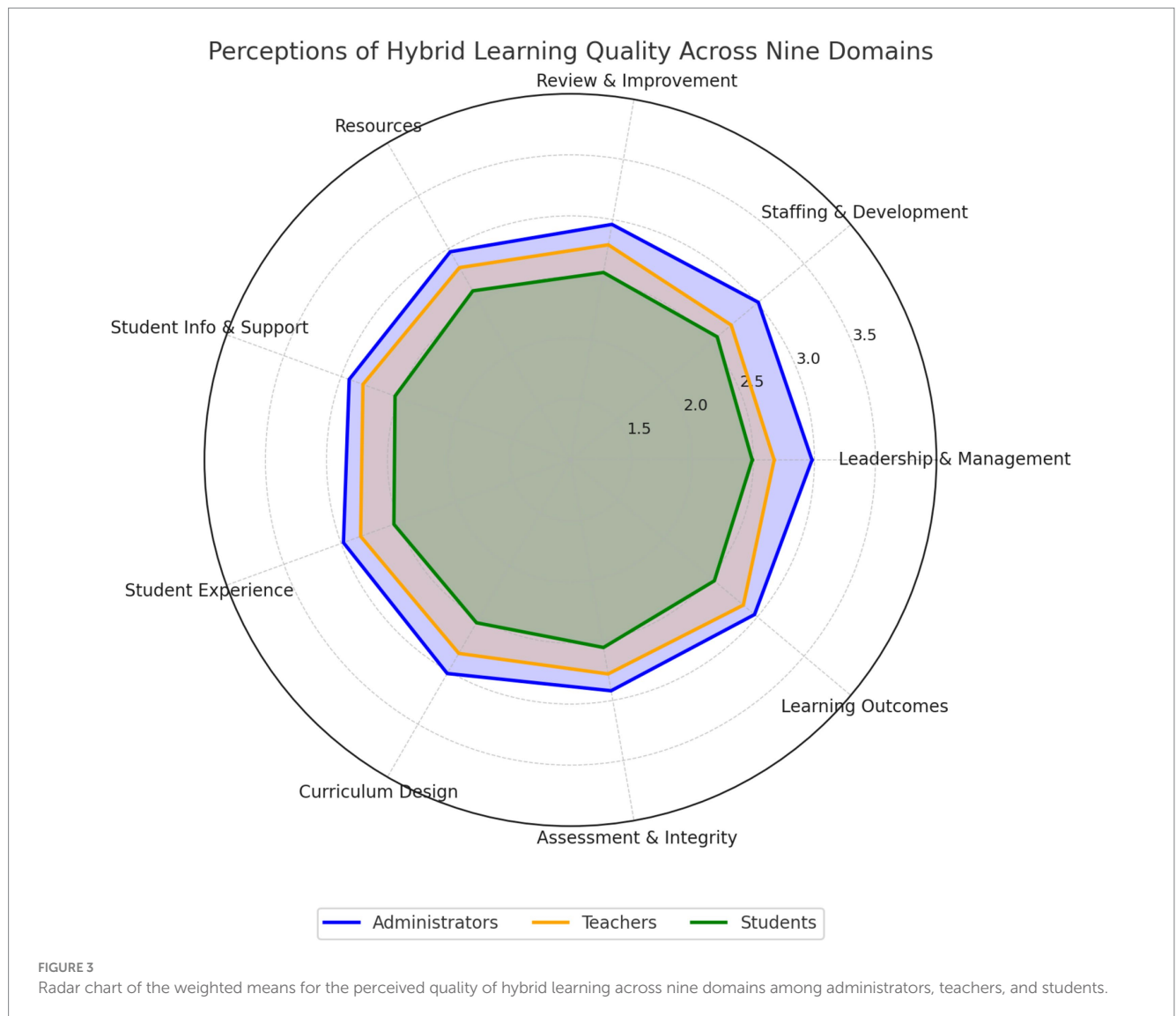
All groups rated learning outcomes as “High,” though administrators and teachers evaluated them more positively than students. Student feedback was strongest for outcome transparency and alignment with professional and academic standards. These results are consistent with findings by Ren et al. (2020), who emphasized that learning outcomes are shaped by instructional behaviors, feedback mechanisms, and student input.

Taken together, the results indicate that while the university’s hybrid learning framework meets most quality indicators, perceptual gaps remain between stakeholders. Addressing these gaps—particularly in leadership visibility, staffing, and student support—could further enhance the quality and inclusivity of hybrid learning provision.

These findings confirm significant perceptual differences across all nine domains of hybrid learning quality. These discrepancies may arise from variations in role-specific expectations, visibility of institutional efforts, or levels of engagement with hybrid systems. The relatively lower student ratings—especially in leadership, support, and staffing—signal areas for targeted improvement.

This multi-stakeholder evaluation approach responds to criticisms of prior studies that relied on single-group assessments (Gao, 2022). By integrating feedback from administrators, teachers, and students, the study supports a more inclusive and comprehensive model of educational quality assessment. It also reinforces the importance of participatory evaluation frameworks such as the Context, Input, Process, and Product (CIPP) model (Madaus, 2000), which advocates for triangulated input in identifying actionable insights.

Findings from this analysis will inform the development of tailored training and institutional improvement plans. These will focus



on addressing quality gaps highlighted by students while reinforcing areas of convergence across stakeholder groups (Wang, 2020).

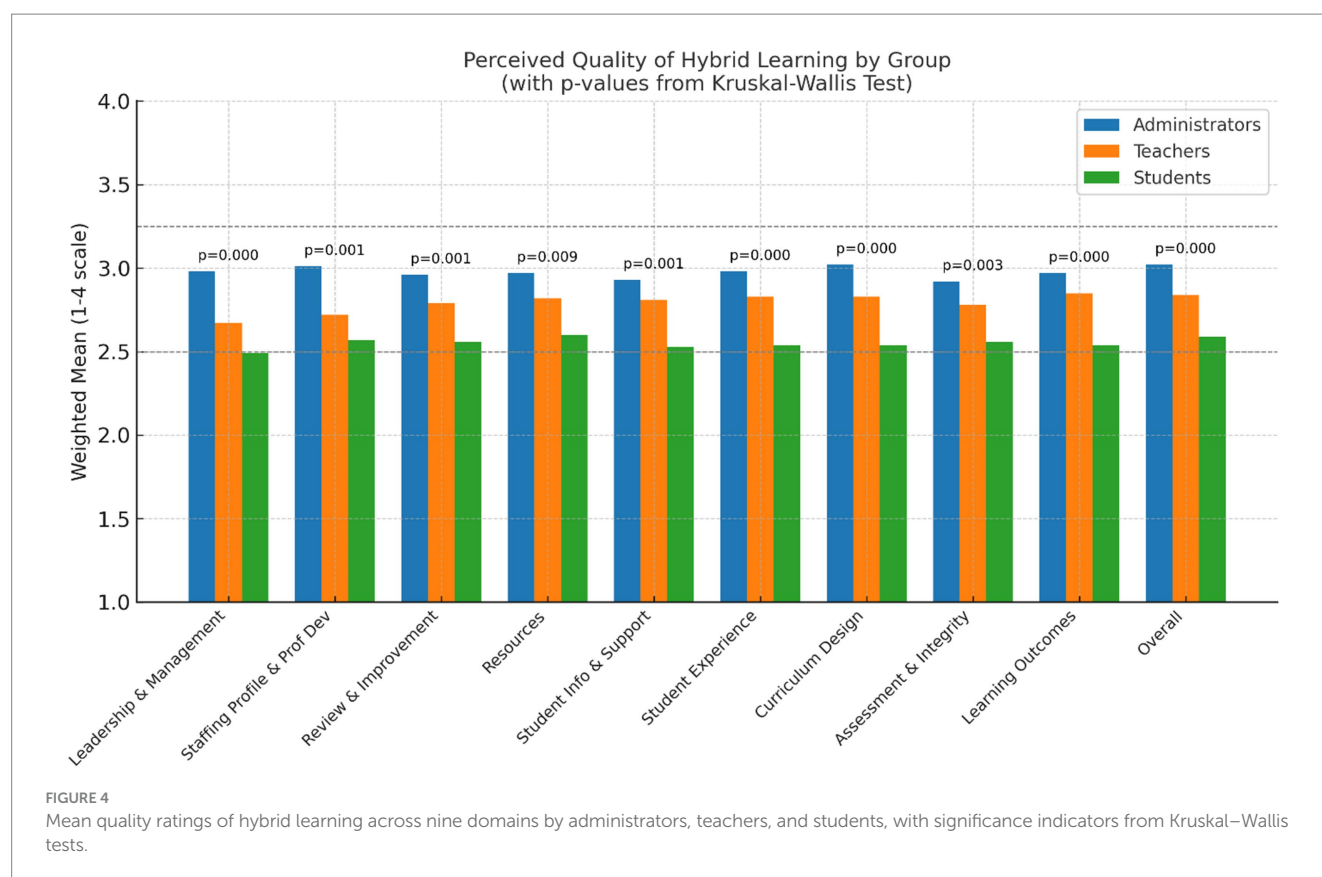
Conclusion and recommendations

The implementation of hybrid learning at Southwest Medical University demonstrates a generally high quality of delivery, meeting key performance indicators across multiple domains of the [Asia-Pacific Economic Cooperation \(2017\)](#) framework. Institutional readiness is evident in the strong technological competence of administrators, teachers, and students, as well as in the availability of supportive infrastructure, clear policies, and capacity-building programs that have facilitated the effective rollout of hybrid instruction. This study involved three primary stakeholder groups—administrators, teachers, and students—ensuring diverse perspectives from those directly engaged in hybrid education. Administrators provided strategic oversight and policy direction (Freeman, 2010), teachers contributed their instructional expertise, and students shared insights from their learning experiences. Across the nine domains, all groups rated the quality as high, with

administrators giving the highest ratings, followed by teachers, then students. This difference underscores the need for alignment between institutional planning and the lived realities of hybrid learning participants. Strong leadership, qualified staff, robust review mechanisms, sufficient resource allocation, transparent assessment practices, and opportunities for both academic and social engagement emerged as notable strengths. Thus, hybrid learning remains a vital complement to traditional instruction, offering flexibility, inclusivity, and resilience in a rapidly evolving educational landscape. Continuous review, innovation, and stakeholder engagement are essential to sustaining high-quality hybrid education in the post-pandemic era (Zhao and Yuan, 2010).

Despite these positive outcomes, this study was conducted within a single university setting, which limits the generalizability of the findings to broader contexts. The reliance on self-reported survey data introduces potential bias, as responses may be influenced by individual perceptions or recent experiences. Moreover, the cross-sectional design captures a single point in time, without accounting for changes in hybrid learning quality over multiple academic terms.

Further research should explore hybrid learning quality in multiple institutions, both within and outside China, to provide



comparative benchmarks. Longitudinal studies could capture how hybrid learning quality evolves over time and identify factors contributing to its sustainability. Incorporating mixed-method approaches—such as interviews, classroom observations, and learning analytics—would offer richer insights into the dynamics of hybrid education. Additionally, comparative evaluations between hybrid learning and other delivery models, such as fully online and HyFlex approaches, could help institutions make informed strategic choices. Further, targeted training initiatives are recommended to enhance hybrid learning quality, including professional development in technology-enhanced pedagogy, policy interpretation, and digital leadership. Strengthening student orientation and digital literacy programs will further promote engagement and satisfaction. Establishing inclusive feedback loops that integrate administrator, teacher, and student perspectives will ensure that institutional strategies are responsive to actual experiences in hybrid environments.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

The studies involving humans were approved by Silliman University Research Ethics Committee and Ethics Committee of

Southwest Medical University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

HY: Writing – review & editing, Writing – original draft. DM: Validation, Formal analysis, Visualization, Methodology, Supervision, Writing – review & editing, Conceptualization.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that Gen AI was used in the creation of this manuscript. A Generative AI was used to improve the grammar and editing style, specifically in the improvement of the clarity, academic tone, and fluency of the document.

References

- Amaechi, C. V., Amaechi, E. C., Onumonu, U. P., and Kgosiemang, I. M. (2022a). Systematic review and annotated bibliography on teaching in higher education academies (HEAs) via group learning to adapt with COVID-19. *Educ. Sci.* 12:699. doi: 10.3390/educsci12100699
- Amaechi, C. V., Amaechi, E. C., Oyetunji, A. K., and Kgosiemang, I. M. (2022b). Scientific review and annotated bibliography of teaching in higher education academies on online learning: adapting to the COVID-19 pandemic. *Sustainability* 14:12006. doi: 10.3390/su141912006
- Asia-Pacific Economic Cooperation (2017) Quality assurance of online learning toolkit Asia-Pacific Economic Cooperation. Available online at: <https://www.apec.org/publications/2017/12/quality-assurance-of-online-learning-toolkit> (Accessed January 13, 2023).
- Cheon, J., Lee, S., Crooks, S. M., and Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Comput. Educ.* 59, 1054–1064. doi: 10.1016/j.compedu.2012.04.015
- Comas-Quinn, A. (2011). Learning to teach online or learning to become an online teacher: an exploration of teachers' experiences in a blended learning course. *ReCALL* 23, 218–232. doi: 10.1017/S0958344011000152
- Costreie, S. (2011) Assuring quality based on the assessment of learning outcomes. In INTED2011 proceedings (Valencia, Spain, march 7–9, 2011, 3235–3236) IATED
- Feng, X. (2012). Strategies of online tutoring: ability to tutor teachers' teaching dimensions. *China Audio Visual Educ.* 8, 40–45.
- Freeman, R. E. (2010). Strategic management: A stakeholder approach. Cambridge, England, UK: Cambridge University Press. doi: 10.1017/CBO9781139192675
- Gao, Q. (2022). Research on the comprehensive evaluation system of teaching quality under the blended teaching mode. *Technol Innov.* 135–138.
- Gbobaniyi, O., Srivastava, S., Oyetunji, A. K., Amaechi, C. V., Beddu, S. B., and Ankita, B. (2023). The mediating effect of perceived institutional support on inclusive leadership and academic loyalty in higher education. *Sustainability* 15:13195. doi: 10.3390/su151713195
- Ge, F., and Wang, Y. (2020). Construction and application of blended teaching mode in university based on intelligent teaching platform. *Modern Distance Educ.* 24–31.
- Han, S., and Wang, H. (2020). Research on key elements and effective methods of implementing hybrid learning mode. *Wireless Internet Technol.* 17, 99–106.
- Huang, R., Martin, P., Zheng, L., and Ma, D. (2009). Curriculum design theory based on blended learning. *Educ. Res. Electric Power*, 9–14.
- International Institute for Educational Planning-UNESCO (2011). Defining and measuring the quality of education. Available online at: <https://www.iiep.unesco.org/en/articles/defining-and-measuring-quality-education> (Accessed December 14, 2022).
- King, S. E., and Arnold, K. C. (2012). Blended learning environments in higher education: a case study of how professors make it happen. *Mid-West. Educ. Res.* 25, 44–59.
- Li, X. (2020). Construction and empirical test of a model for college students' satisfaction with online learning during the pandemic: based on a survey of 15 universities in Shanghai. *Open Educ. Res.* 21, 102–111.
- Li, X. (2023). Research on influencing factors of college students' online learning satisfaction. *China Distance Educ.* 5, 43–50.
- Li, S., Zhang, J., Yu, C., and Chen, L. (2017). Rethinking distance tutoring in e-learning environments: a study of the priority of roles and competencies of open university tutors in China. *Int. Rev. Res. Open Distrib. Learn.* 18, 189–212. doi: 10.19173/irrodl.v18i2.2752
- Lin, J. (2015). Negotiation and consensus: a realistic choice to improve the effectiveness of evaluation analysis based on the fourth-generation evaluation practice. *Educ. Develop. Res.* 30, 47–52.
- Lin, J. (2023). Construction and practice of blended teaching quality evaluation system. *China Audio Technol. Educ.* 11, 103–108.
- Liu, A. (2013). Comparison study on the relationship between internet use and learning among college students: A case study of 12 sampled universities in Hunan Province. *Journal of Central South University of Forestry & Technology (Social Sciences)*, 167–170.
- Madaus, G. F. (2000). Evaluation models: Viewpoints on educational and human services evaluation. Boston: Kluwer Academic Publishers.
- Ministry of Education of the People's Republic of China. (2010). Outline of China's national plan for medium- and long-term education reform and development (2010–2020). Available online at: https://internationaleducation.gov.au/News/newsarchive/2010/Documents/China_Education_Reform_pdf.pdf (Accessed June 22, 2022).
- Muljana, P. S., and Luo, T. (2019). Factors contributing to student retention in online learning. Old Dominion University Faculty Publications. Available online at: https://digitalcommons.odu.edu/cgi/viewcontent.cgi?article=1080&context=stempas_fac_pubs (Accessed April 10, 2023).
- Ni, A. Y. (2013). Comparing the effectiveness of classroom and online learning: teaching research methods. *J. Public Aff. Educ.* 19, 199–215. doi: 10.1080/15236803.2013.12001730
- Porter, W.W. (2014) NACOL blended learning teacher competency framework international association for K-12 online learning. Vienna, Virginia, USA: Aurora Institute.
- Qu, Z., and Wang, T. (2017). Theoretical exploration of long-term quality assurance system for distance education. *Cult. Educ. Inform.*, 127–128.
- Shaikh, U. U., Naveed, Q. N., and Qureshi, M. R. N. (2022). Persistence and dropout in higher online education: review and categorization of factors. *Front. Psychol.* 13:902070. doi: 10.3389/fpsyg.2022.902070
- So, H. J., and Brush, T. A. (2008). Student perceptions of collaborative learning, social presence, and satisfaction in a blended learning environment: relationships and critical factors. *Comput. Educ.* 51, 318–336. doi: 10.1016/j.compedu.2007.05.009
- Ren, J., Li, Y., and Wang, F. (2020). Frontiers, hot spots and trends in the field of blended learning research—Quantitative research based on Citespace Knowledge Graph Software. *Audio-visual Education Research*, 37, 27–33.
- UNESCO IBE (2023). Hybrid education, learning, and assessment: a reader—an overview of frameworks, issues and developments in light of COVID-19 and the way forward. It explicitly notes the accelerated emergence of hybrid practices during COVID-19 and gathers frameworks for evaluation and sustaining quality (assessment, QA, and policy directions). Available online at: <https://unesdoc.unesco.org/ark:/48223/pf0000387639> (Accessed February 20, 2023).
- von Bertalanffy, L. (1968). General system theory: Foundations, development, applications. George Braziller. Available online at: https://openlibrary.org/books/OL13550632M/General_system_theory (Accessed November 24, 2022).
- Wang, G., Yu, S., Huang, H., and Lippard, S. J. (2015). A status quo analysis of blended learning research in China. *China Distance Education*, 25–31.
- Wang, L. (2016). A study on the mechanism of school-enterprise cooperation in vocational education from a perspective of collaboration theory. *China Light Industry Educ.*, 1, 9–11.
- Wang, C. (2020) Research on college students' online learning satisfaction—Based on the survey of seven universities in Wuhan. Central China Normal University dissertation collection, 77
- Weiger, P. R. (1998). What a tangle (world wide) web we weave. *Community Coll. Week.* 10, 11–13.
- Wu, L. (2023). Construction of flipped classroom teaching quality evaluation system. *Mod. Educ. Technol.* 11, 60–66.

- Xiao, J. (2016). Who am i as a distance tutor? An investigation of distance tutors' professional identity in China. *Distance Educ.* 37, 4–21. doi: 10.1080/01587919.2016.1158772
- Xie, Y. (2020). Frontiers, hot spots and trends in the field of blended learning research—Quantitative research based on Citespace Knowledge Graph Software. *Audio-visual Education Research*, 37, 27–33.
- Yeung, A.S. (2001). Toward an effective quality assurance model of web-based learning: the perspective of academic staff. *Online J. Distance Learn. Adm.*, 4. Available online at: <http://www.westga.edu/~distance/ojdla/fall44/yeung44.html> (Accessed March 25, 2023).
- Zhao, G., and Yuan, S. (2010). Research on students' satisfaction and influencing factors of blended learning: a case study of the teaching network of Peking University. *China Distance Educ.* 6, 32–38, 79.
- Zhu, Y. (2022). Measurement, description, judgment, and construction: a review of the theory of fourth-generation educational evaluation. *Educ. Measure. Eval. Theor.* 3, 4–7+17.