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The Influence of Teaching Design and School Support in Blended Teaching on Student Satisfaction with Perceived Usefulness as Mediator

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Abstract

Blended teaching has become an essential instructional model in higher education, yet student satisfaction in this context remains uneven, raising concerns about the factors that drive positive learning experiences. This study investigates the influence of teaching design and school support on student satisfaction, with perceived usefulness examined as a mediating variable. A quantitative research design was employed using purposive sampling, and data were collected from 203 university students in Shandong Province, China. The results indicate that both teaching design and school support significantly and positively affect student satisfaction. Furthermore, perceived usefulness plays a partial mediating role in these relationships, highlighting its importance in understanding how instructional and institutional factors shape student perceptions. These findings clarify the mechanisms underlying student satisfaction in blended learning and offer practical insights for educators and administrators to improve course design and institutional support.

Keywords: Blended Teaching, Student Satisfaction, Higher Education, University Students

Introduction

Blended teaching, which integrates face-to-face instruction with online learning, has emerged as a core instructional model in higher education as universities worldwide respond to the broader digital transformation of society and the knowledge economy (Suson, 2024). Within contemporary learning theories, such as constructivism and technology-enhanced learning, blended teaching is expected to promote active learning, autonomy, and deeper cognitive engagement by combining structured classroom interaction with flexible, technology-supported learning environments. Consequently, blended teaching is widely regarded as a strategic approach to improving learning quality, access, and efficiency in mass higher education systems.

However, despite its theoretical and practical advantages, student satisfaction in blended learning environments remains uneven (Hashim et al., 2023). From a higher education

management and learning effectiveness perspective, student satisfaction is not merely an affective outcome but a key indicator of educational quality, student retention, and learning sustainability. Prior research suggests that satisfaction reflects how well instructional design and institutional support align with students' learning needs, expectations, and perceived value of learning activities (Nuryakin et al., 2023). Therefore, identifying the determinants of student satisfaction in blended teaching is essential for understanding whether digitalized teaching reforms truly achieve their intended pedagogical and organizational goals.

Within this global transformation, Chinese higher education has experienced a particularly rapid expansion of blended teaching, especially following the COVID-19 pandemic, which accelerated nationwide digitalization in universities (Wang & Sun, 2022). Chinese universities have increasingly integrated learning management systems, online platforms, and digital resources into traditional teaching practices as part of broader policies aimed at improving educational modernization and quality. Nevertheless, this large-scale transition has also exposed structural and pedagogical challenges, including unequal access to digital resources, inconsistent institutional support, and students' varying levels of self-regulation and digital learning competence (Zhang et al., 2023). These challenges suggest that the effectiveness of blended teaching cannot be assumed to be uniform and that student satisfaction may depend strongly on how teaching design and school support are implemented in specific institutional contexts. Accordingly, examining the factors that shape student satisfaction in blended learning within the Chinese higher education system is both theoretically and practically important.

Despite the growing body of research on blended learning, several important gaps remain. Empirical findings regarding the effects of teaching design and school support on student satisfaction are inconsistent, with some studies reporting significant positive relationships, whereas others find no direct effects (He & Fu, 2022; Beltrán et al., 2023). Methodologically, many existing studies rely on small sample sizes and single-institution samples, limiting statistical power, contextual diversity, and the generalizability of findings (Prawisanthi & Permana, 2022; Tong, 2022; Bui & Bui, 2023; Wen, 2025). Finally, while perceived usefulness has been widely studied in technology acceptance and user perception research, its mediating role in explaining how instructional design and institutional support influence student satisfaction in blended learning contexts remains underexplored (Hashim et al., 2023; Nuryakin et al., 2023).

Therefore, the present study sets out to investigate the influence of teaching design and school support on student satisfaction in blended teaching, while testing the mediating role of perceived usefulness. By focusing on university students in Shandong Province, China, this research contributes to a deeper understanding of the mechanisms that enhance satisfaction in blended learning contexts and provides practical implications for both educators and administrators.

Literature Review

The Relationship between Teaching Design and Student Satisfaction

Teaching design is widely recognized as a central determinant of learning outcomes in higher education, particularly in blended teaching environments where the integration of face-to-face and online modalities requires careful planning. Effective teaching design includes the

clarity of learning objectives, logical sequencing of content, appropriateness of instructional methods, and alignment between teaching activities and assessment (Abuhassna & Alnawajha, 2023). When teaching design is systematic and learner-centered, students are more likely to engage actively with course content and perceive their learning experience as valuable.

Empirical studies have consistently shown a significant positive relationship between teaching design and student satisfaction. For instance, courses that demonstrate clear instructional goals, well-structured materials, and interactive learning strategies are associated with higher levels of satisfaction, as students feel supported and motivated throughout the learning process (Govender, 2024; Le, 2025). In blended learning contexts, where students must navigate both online and offline components, the coherence and organization of teaching design are particularly important for reducing confusion and ensuring a smooth learning experience (Fang, 2024).

Moreover, teaching design directly influences students' perceptions of the quality of instruction. A well-designed blended course not only facilitates knowledge acquisition but also fosters students' confidence in achieving academic success, thereby enhancing their satisfaction. Conversely, poorly designed instruction, such as disorganized content delivery or misaligned assessment, can lead to frustration, reduced engagement, and lower satisfaction (Rajabalee & Santally, 2021).

However, the research by Beltrán et al. (2023) revealed a decline in satisfaction during emergency remote teaching, which later exceeded pre-COVID levels after technology-supported methods were fully integrated. Onecha et al. (2023) revealed that a combination of technical, instructional, interactional, and personal factors contributed to students' uncertainty and disengagement in online learning. These discrepancies point to the possibility that teaching design's impact on student satisfaction is highly context-dependent, yet existing research does not fully explore the factors that contribute to this variation. Based on this inconsistency in research, this study proposes the following hypotheses:
H1: Teaching design has a positive influence on student satisfaction.

The Relationship between School Support and Student Satisfaction
School support plays a critical role in shaping students' learning experiences and satisfaction within blended teaching environments (Feriana & Ulfatun, 2024). It encompasses the institutional resources, administrative services, technological infrastructure, and emotional or academic assistance that enable students to adapt effectively to hybrid learning models (Bottiani, Bradshaw & Mendelson, 2016). Adequate school support not only provides students with access to reliable learning platforms and digital tools but also fosters a sense of belonging and security that enhances their engagement and persistence in learning.

Empirical studies have consistently demonstrated a positive association between school support and student satisfaction. For instance, Tuiloma et al. (2021) emphasized that institutional support services, such as responsive academic advising and accessible online resources, contribute significantly to students' perceptions of quality in blended learning. Similarly, Bossman and Agyei (2022) found that universities that invest in technological infrastructure and provide training for both students and instructors achieve higher

satisfaction levels among learners. These findings suggest that school support functions as both a practical and psychological enabler, addressing technical challenges while also reinforcing students' confidence in the blended learning process.

In the Chinese higher education context, school support is particularly vital given the rapid shift to blended learning and the uneven distribution of digital resources across regions (Zhang et al., 2023). Universities are expected to not only enhance technical support but also strengthen mentoring, feedback mechanisms, and psychological support services to ensure that students feel guided and valued. Therefore, understanding how school support contributes to student satisfaction can provide actionable insights for institutions aiming to improve the effectiveness of blended teaching.

However, existing studies have primarily focused on teaching design, technology acceptance, or individual learner characteristics, while systematic investigations of how school support influences student satisfaction in the Chinese context remain limited (Cheng, Mo & Duan, 2023; Wang et al., 2021). This gap is particularly relevant against the backdrop of rapid digitalization in higher education. Therefore, this study proposes the following hypothesis:
H2: School support has a significant positive effect on student satisfaction.

The Mediating Role of Perceived Usefulness

Perceived usefulness, a core construct of the Technology Acceptance Model (TAM), refers to the extent to which individuals believe that using a particular system or learning approach will enhance their performance (Almulla, 2021). In educational contexts, it reflects students' perceptions of how blended teaching contributes to their academic success, efficiency, and overall learning effectiveness (Natasia, Wiranti & Parastika, 2022). As blended learning environments combine both online and offline components, perceived usefulness becomes a key determinant of how students evaluate their learning experience.

Research has shown that perceived usefulness not only has a direct influence on student satisfaction but also mediates the relationship between instructional and institutional factors and learning outcomes. For instance, when teaching design is clear, engaging, and aligned with course objectives, students are more likely to perceive blended learning as useful, which in turn enhances their satisfaction (Fisher, Perényi & Birdthistle, 2021; Lane et al., 2021). Similarly, strong school support, such as providing reliable digital platforms, technical assistance, and accessible resources, reinforces students' perceptions of the usefulness of blended teaching, ultimately improving their satisfaction (Pei et al., 2024; Suson, 2024).

The mediating role of perceived usefulness is crucial because it explains the mechanism through which teaching design and school support translate into positive student experiences. Without recognizing this mediating effect, the relationship between instructional or institutional factors and satisfaction may be overstated or misunderstood. By incorporating perceived usefulness, researchers can capture students' cognitive evaluations of blended teaching and better explain why certain educational strategies succeed in fostering satisfaction. Despite its significance, relatively few studies in the context of Chinese higher education have examined perceived usefulness as a mediator between teaching-related and institution-related factors and student satisfaction. This study seeks to address this gap by empirically testing the mediating effect of perceived usefulness, thereby

contributing to a more nuanced understanding of how blended teaching can be optimized to enhance student satisfaction. Based on this, this study proposes the following hypotheses:
H3: Perceived usefulness mediating the relationship between teaching design and student satisfaction.
H4: Perceived usefulness mediating the relationship between school support and student satisfaction.

Methodology

This study employed a quantitative research design to examine the influence of teaching design and school support on student satisfaction in blended teaching, with perceived usefulness as a mediating variable. A survey method was adopted as it allows for the collection of standardized data from a relatively large group of respondents, enabling statistical testing of the hypothesized relationships.

The target population consisted of university students enrolled in blended teaching courses in Shandong Province, China. Purposive sampling was used to ensure that the respondents had sufficient exposure to blended learning environments. A total of 203 valid responses were collected, which provided an adequate sample size for conducting statistical analysis and ensured representativeness.

A structured questionnaire was developed based on validated measurement scales from previous studies. Each construct comprised ten items. Items measuring teaching design were adapted from Bhagat et al. (2023) and Cheng, Mo, and Duan (2023). The school support scale was based on instruments developed by Chiu (2021), Lee (2010), and Sakalli et al. (2021). The perceived usefulness scale drew from Ghazal, Aldowah, and Umar (2018), Huang (2021), Kobayashi and Little (2011), Vaughan (2014), Zhao and Chen (2014), Zhang and Dang (2020). Finally, the student satisfaction scale was adapted from Cheng, Mo, and Duan (2023), Chiu et al. (2005), Dinh et al. (2021), and Zeqiri et al. (2021). The questionnaire consisted of four main sections: demographic information, teaching design, school support, perceived usefulness, and student satisfaction. All items, except demographics, were measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument was reviewed by academic experts to ensure content validity, and a pilot test was conducted to refine item clarity and reliability.

Data were collected through online and offline distribution of questionnaires over a period of four weeks. Participants were informed of the purpose of the study and assured of confidentiality and anonymity. Informed consent was obtained prior to participation, and respondents were allowed to withdraw at any point without penalty.

The collected data were coded and analyzed using SPSS version 27. Descriptive statistics were conducted to summarize participants' demographic characteristics, and the internal consistency of the constructs was evaluated using Cronbach's alpha. Pearson correlation analysis was performed to examine relationships among the study variables. To test the hypothesized direct and indirect effects, mediation analysis was conducted using the PROCESS Macro for SPSS (Model 4; Hayes, 2022). The mediating role of perceived usefulness was evaluated with 5,000 bootstrap samples to obtain bias-corrected confidence intervals, providing a robust assessment of the significance of indirect effects.

Data Analysis

The reliability of the study constructs was assessed using Cronbach's Alpha coefficients to examine the internal consistency of the measurement scales. As shown in Table 1, all variables demonstrated good reliability, with Cronbach's Alpha values exceeding 0.8: Teaching Design (0.827), School Support (0.810), Perceived Usefulness (0.832), and Student Satisfaction (0.829). These results indicate that the items within each construct consistently measure the intended concept, confirming the internal consistency of the scales (Nunnally & Bernstein, 1994). The high reliability of the constructs supports the suitability of the measurement instruments for subsequent analyses, including correlation, regression, and mediation testing, and ensures that the findings regarding the relationships among teaching design, school support, perceived usefulness, and student satisfaction are based on robust and dependable measures.

Table1

Reliability Analysis of Study Variables

Variables	**Cronbach's Alpha**
Teaching Design	.827
School Support	.810
Perceived Usefulness	.832
Student Satisfaction	.829

The findings reveal that student satisfaction (SA) is significantly and positively correlated with all other variables. Specifically, SA demonstrates strong correlations with teaching design ($r = .755$, $p < .01$), school support ($r = .779$, $p < .01$), and perceived usefulness ($r = .741$, $p < .01$). Among these, school support exhibits the strongest association with student satisfaction, indicating that institutional backing and resources play a particularly critical role in shaping students' overall satisfaction. These results suggest that both teaching design and students' perceptions of usefulness are important contributors, but school support may serve as the most influential factor in enhancing satisfaction in blended learning contexts. This finding underscores the importance of not only designing engaging courses but also ensuring that students have the necessary support systems to thrive academically.

Table 2

Correlation Matrix of Key Variables

Variables	**TD**	**SS**	**PU**	**SA**
Teaching Design (TD)	1			
School Support (SS)	.757**	1		
Perceived Usefulness (PU)	.741**	.743**	1	
Student Satisfaction (SA)	.755**	.779**	.741**	1

**. Correlation is significant at the 0.01 level (2-tailed).

The regression results indicate that both teaching design and school support exert significant positive effects on student satisfaction. Teaching design explains 57% of the variance in student satisfaction ($R^2 = 0.570$, $p < .001$), with a standardized beta of 0.755, suggesting a strong predictive relationship. Similarly, school support accounts for 60.9% of the variance ($R^2 = 0.609$, $p < .001$), with an even stronger standardized beta of 0.779. These findings highlight that while both variables are critical, school support emerges as the stronger predictor of

student satisfaction, underscoring the essential role of institutional support mechanisms in enhancing students' blended learning experiences.

Table 3
Regression Analysis of Teaching Design and School Support on Student Satisfaction

Variables	R^2	F	B	S.E.	Beta	t	p
Teaching Design	0.57	266.637	0.712	0.044	0.755	16.329	<.001
School Support	0.609	309.670	0.753	0.043	0.779	17.597	<.001

a. Dependent Variable: Student Satisfaction

The mediation analysis reveals that teaching design significantly predicts perceived usefulness (B = 0.752, p < .001), which in turn exerts a positive effect on student satisfaction (B = 0.3739, p < .001). Teaching design also has a direct positive effect on student satisfaction (B = 0.4306, p < .001). Importantly, the indirect effect of teaching design on student satisfaction through perceived usefulness is significant (indirect effect = 0.2811, 95% CI [0.0965, 0.4051]), confirming the mediating role of perceived usefulness. These results suggest that teaching design not only directly enhances student satisfaction but also indirectly contributes by improving students' perceptions of usefulness in the learning process.

Table 4
Mediation Analysis of the Effect of Teaching Design on Student Satisfaction via Perceived Usefulness

Path / Effect	Coefficient	SE	t	p	95% CI (LL–UL)
Outcome: PU					
TD → PU	0.752	0.048	15.6563	0	0.6573 – 0.8467
Outcome: SA					
TD → SA (direct)	0.4306	0.0593	7.2591	0	0.3136 – 0.5476
PU → SA	0.3739	0.0585	6.3941	0	0.2586 – 0.4892
Indirect Effect (Mediation)					
TD → PU → SA	0.2811	0.0755	—	—	0.0965 – 0.4051

As presented in Table 5, school support significantly predicted perceived usefulness (B = 0.7730, p < .001), which was positively associated with student satisfaction (B = 0.3370, p < .001). School support also exerted a significant direct effect on student satisfaction (B = 0.4925, p < .001). Moreover, the indirect effect of school support on student satisfaction through perceived usefulness was significant (indirect effect = 0.2605, 95% CI [0.1120, 0.3663]). These findings indicate that perceived usefulness partially mediates the relationship between school support and student satisfaction, suggesting that institutional support enhances satisfaction both directly and by strengthening students' perceptions of usefulness.

Table 5
Mediation Analysis of the Effect of School Support on Student Satisfaction via Perceived Usefulness

Path / Effect	Coefficient	SE	t	p	95% CI (LL–UL)
Outcome: PU					
SS → PU	0.7730	0.0492	15.7242	0	0.6760 – 0.8699
Outcome: SA					
SS → SA (direct)	0.4925	0.0591	8.3380	0	0.3760 – 0.6089
PU → SA	0.3370	0.0567	5.9392	0	0.2251 – 0.4489
Indirect Effect (Mediation)					
SS → PU → SA	0.2605	0.0644	—	—	– 0.3663 0.1120

Discussion

The findings of this study provide valuable insights into the complex relationships between teaching design, school support, perceived usefulness, and student satisfaction in blended learning environments. The results confirm that both teaching design and school support have significant positive effects on student satisfaction, aligning with previous research that highlights the importance of instructional quality and institutional support in enhancing students' learning experiences (Govender, 2024; Zhang et al., 2023). Specifically, the study emphasizes how these factors interact to create a supportive and effective learning environment, thereby fostering higher levels of student engagement and satisfaction.

The significant direct effect of teaching design on student satisfaction is consistent with existing literature that emphasizes the importance of well-structured, engaging, and clear course materials in fostering positive learning experiences. Teaching design includes not only the content and delivery method but also the flexibility and interactivity that blended learning platforms offer. By creating a more flexible and engaging learning environment, teaching design helps students feel more motivated and confident in their learning process. This aligns with studies that show how high-quality teaching design enhances students' cognitive and emotional engagement, which in turn boosts satisfaction (Tuiloma et al., 2021).

Similarly, school support was found to have a significant positive effect on student satisfaction. School support, which encompasses not only technical support but also emotional, academic, and administrative backing, plays a crucial role in student satisfaction, particularly in blended learning contexts where students often face challenges such as navigating online platforms and balancing various learning modes. The strong influence of school support reflects findings from earlier studies that argue institutional support can significantly alleviate students' stress and anxiety, improving their overall learning satisfaction (Kakada, Deshpande & Bisen, 2019). As universities increasingly embrace digital learning environments, ensuring robust support systems is essential for maintaining high levels of student satisfaction and engagement.

One of the most interesting findings from this study is the role of perceived usefulness as a mediator between both teaching design and school support and student satisfaction. The results indicate that perceived usefulness partially mediates the effects of both teaching design and school support on student satisfaction, with significant indirect effects.

This suggests that students' perceptions of how effectively the blended learning environment enhances their learning experience play a key role in shaping their overall satisfaction. When students believe that the learning tools and methods provided are useful in helping them achieve their academic goals, they are more likely to be satisfied with the course. This is consistent with the TAM, which posits that perceived usefulness is a critical factor in students' acceptance and satisfaction with technology-enhanced learning environments (Al-Nuaimi & Al-Emran, 2021).

Moreover, the fact that both teaching design and school support influence perceived usefulness underscores the importance of creating a learning environment that is not only well-designed but also adequately supported by the institution. For example, well-designed courses that are accompanied by strong institutional support (e.g., timely feedback, access to learning resources) are more likely to be perceived as useful, leading to higher levels of satisfaction.

From a practical standpoint, these findings suggest that universities should focus on both enhancing teaching design and strengthening school support systems to improve student satisfaction in blended learning environments. The study highlights the importance of instructional clarity, interactivity, and accessibility in course design, while also emphasizing the necessity of providing comprehensive support systems to assist students in navigating technological and academic challenges. Universities should consider integrating more personalized feedback, technical assistance, and peer support programs to increase students' sense of value and satisfaction with the learning process.

While this study provides valuable insights, there are limitations that should be considered. The data were collected from a specific sample of university students in China, and the findings may not be fully generalizable to other cultural or educational contexts. Future research could expand the sample to include students from various regions or academic disciplines to explore whether these relationships hold across different educational settings. Additionally, longitudinal studies could be conducted to examine how teaching design, school support, and perceived usefulness evolve over time and their long-term effects on student satisfaction and academic performance.

Conclusion

Overall, this study highlights the critical roles that both teaching design and school support play in shaping student satisfaction in blended learning environments, with perceived usefulness serving as an important mediator in these relationships. The findings provide actionable insights for educators and administrators seeking to enhance the quality of blended learning experiences, ensuring that students are not only satisfied but also deeply engaged in their learning journeys.

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