

comprehensive subjective evaluation of the entire teaching process by students, directly related to learning effectiveness and willingness to continue learning, and is a key entry point for optimizing the quality of online teaching (Jiang Haifeng, Tian Peng, Yin Hu, 2025). However, there are still common pain points in current online teaching in universities, such as insufficient teaching interaction, unstable platform experience, and prominent individual learning differences, which restrict the improvement of students' learning satisfaction. Therefore, how to effectively improve the satisfaction of college students with online learning has become a core issue that urgently needs to be addressed in the digital teaching reform of universities.

From the current research status, online education research at home and abroad has formed a multidimensional development pattern. Scholars have extensively explored the influencing factors of online learning satisfaction based on different theoretical frameworks, such as customer satisfaction theory (Jiang Haifeng et al., 2025) and the Community of Inquiry framework (Zhang, Huang, Hussain, & Dong, 2023). Research has found that students' learning attitudes, curriculum design, teacher teaching methods (Cheng, Mo, & Duan, 2023), learning support services (Wu Bin, Zhang Mengsi, Zhai Li, et al., 2024), and student engagement (Sharif Nia, Mar ô co, She, et al., 2023) are all key influencing factors. However, existing research has mostly focused on the field of basic education or specific course types, and systematic empirical research on the undergraduate population in Chinese universities, combined with multidimensional variables such as teachers, platforms, and individuals, is still relatively weak. There are gaps in both theoretical systems and practical references.

Based on this, this study takes the digital teaching reform in universities as the starting point and focuses on the students of Xi'an XD University as the research subjects, aiming to systematically explore the current situation and related factors of online learning experience among college students. Specifically, this study focuses on two core research questions: firstly, what is the overall level of satisfaction among college students with online learning? Secondly, what factors are significantly correlated with college students' satisfaction with online learning? Based on these two

issues, this study establishes two core research objectives: firstly, to systematically describe and grasp the overall situation and specific performance of online learning satisfaction among students at Xi'an XD University. Secondly, conduct a thorough investigation and analysis of the relationship between teacher teaching quality, platform design, personal learning performance, and college students' satisfaction with online learning. The conclusions of this study will provide empirical evidence and practical references for universities to optimize the allocation of digital teaching resources, improve teaching services, and enhance students' online learning experience, thereby deepening the connotation and effectiveness of educational digital transformation.

2. MATERIALS AND METHODS

At the level of defining core concepts, this study covers four core variables: teacher teaching quality, platform design, personal learning performance, and online learning satisfaction. The teaching quality of teachers in online teaching scenarios is a comprehensive system that covers multiple dimensions of abilities, and is the core key to addressing shortcomings such as insufficient interaction and weak supervision in online teaching. Different from traditional offline teaching, the core role of online teachers has shifted from a single knowledge lecturer to a learning designer and growth coach. Their teaching quality mainly includes four core abilities: modular teaching design, technology integration and application, interactive management, and dynamic optimization of teaching. They can directly affect students' online learning depth, classroom participation, and sense of belonging, and are the core elements to ensure the quality of online teaching (Wang Weijun et al., 2016). Online learning platforms are the core carriers for teachers and students to carry out online teaching and knowledge exchange. The quality of their design directly determines students' learning experience and efficiency. High quality platform design takes into account user needs and educational principles, covering four dimensions: interface design, network stability, operational convenience, and hierarchical navigation. It can not only reduce students' online learning burden and ensure learning continuity, but also rely on big data technology

countries place more emphasis on the social interaction experience of online learning, while students in developing countries are more susceptible to technological constraints such as networks and devices (UNESCO, 2021). In recent years, research on satisfaction with online learning in China has developed rapidly, with the focus gradually shifting from early technology application verification to optimizing teaching quality and improving learning experience. Empirical studies have shown that teachers' teaching design ability, emotional support, platform stability, and students' self-directed learning ability all significantly affect online learning satisfaction (Wang Dongqing et al., 2022). The national survey data from the Online Education Research Center of the Ministry of Education (2022) also confirms that institutional support in universities is significantly positively correlated with the quality of teaching services and student satisfaction with online learning. However, existing research has mostly focused on the field of basic education, and systematic studies on the factors influencing online learning experience and satisfaction, combined with multidimensional variables such as teachers, platforms, and individuals, targeting undergraduate students in universities, are still relatively weak, leaving ample research space for the development of this study.

At the level of research methodology, this study mainly adopts a research paradigm that combines literature review and questionnaire survey methods to ensure the scientific and rigorous nature of the research. The literature research method is used to systematically sort out relevant theories and empirical conclusions, clarify the entry point and theoretical framework of this study. The questionnaire survey method is the core empirical research method of this article. This study takes undergraduate students from Xi'an XD University as the research subjects and adopts a stratified random sampling method. The sample size is determined based on the proportion of students in each college (250 questionnaires are planned to be distributed, and more than 200 valid questionnaires are expected to be collected) to ensure the representativeness of the sample. We conducted an online anonymous survey using a self-designed questionnaire, which was designed around four core dimensions: teacher teaching quality, platform design, personal learning performance, and online learning

satisfaction. The questionnaire items were measured using the Likert five point scale. After the questionnaire design is completed, its reliability and validity will be tested through pre survey to ensure the scientific validity of the research tool.

The overall research process of this study is divided into five core stages, progressing layer by layer. Firstly, during the literature review stage, a theoretical framework is established; Secondly, in the stage of determining research dimensions, the core variables are clarified; Conduct large-scale questionnaire surveys again for the data collection stage; Subsequently, in the statistical analysis stage, descriptive statistics (such as frequency, percentage, mean) will be used to analyze the overall situation of student satisfaction and the perception level of various related factors, and to rank each factor to identify factors with higher correlation; Finally, in the stage of proposing countermeasures, based on empirical analysis results, targeted optimization strategies are proposed.

3. RESULTS AND DISCUSSION

In order to understand the satisfaction of a wider group of college students with online learning, this study developed the "College Student Online Learning Satisfaction Questionnaire" and surveyed 215 college students. This section will analyze the results of the questionnaire survey and reveal the satisfaction level of college students with online learning.

Items	Options	Frequency	Percentage
Sex	male	120	55.81%
	female	95	44.19%
	total	215	100.00%
Major	Education major	50	23.26%
	Foreign Language Major	35	16.28%
	Mechanical Engineering major	70	32.56%
	Business Administration major	60	27.91%
	total	215	100.00%
	bachelor degree	135	62.79%
Education	master or above	80	37.21%
	total	215	100.00%
Have you used online platforms for learning	Yes	215	100.00%
	No	0	0.00%
	total	215	100.00%

When analyzing the satisfaction of XD University students with online learning, it is necessary to conduct research and discussion on the results of items 1 to 3 in the survey questionnaire. The survey results of this section are shown in the following table:

NO.	Item	M	SD	Interpretation
NO.1	The effect of using online learning platforms for learning is very good	3.8	0.778	high
NO.2	High acceptance of online learning platforms	4.0	0.911	high
NO.3	We will continue to use online learning platforms for learning in the future	4.2	0.781	high
Total		4.1	0.682	high

The descriptive statistical results show that the overall average satisfaction of XD University students with online learning is 4.1 out of 5, which is at a relatively high level. From a specific dimension perspective, students' "intention to continue learning" scored the highest, indicating that students generally hold a positive attitude towards continuing to use online learning platforms in the future. The second is "acceptance of teaching mode", which indicates that students have a high degree of recognition of online learning itself. The score for "perceived learning effectiveness" is relatively low, but still in the high satisfaction range, reflecting students' belief that online learning can bring good learning outcomes.

When analyzing the factors influencing student satisfaction with online learning at XD University, it is necessary to conduct research and discussion on the survey results of items 4 to 7 in the questionnaire. The survey results of this section are shown in the following table:

NO.	Item	M	SD	Interpretation
NO.4	The motivation, interest, and purpose of learning online courses will have a positive impact on online learning satisfaction	4.0	0.694	high
NO.5	Existing online course learning experience and cognitive level will have a positive impact on online learning satisfaction	3.7	0.763	high
NO.6	The level of participation, vitality, and focus in online course learning will have a positive impact on satisfaction with online learning	3.9	0.744	high
NO.7	The degree of willingness to use online platforms for online learning will have a positive impact on satisfaction with online learning	4.1	0.867	high
Total		3.9	0.845	high

When analyzing the factors influencing the satisfaction of XD University students with online learning and the performance of teachers, it is necessary to conduct research and discussion on the questionnaire results of items 8 to 11 in the survey questionnaire. The survey results of this section are shown in the following table:

NO.	Item	M	SD	Interpretation
NO.8	The stable psychological inclination of teachers towards online teaching will have a positive impact on their satisfaction with online learning	4.1	0.622	high
NO.9	The professional knowledge level, language expression ability, and teaching organization ability of teachers will have a positive impact on online learning satisfaction	4.1	0.754	high
NO.10	The teaching implementation measures taken by teachers to achieve teaching objectives, such as situational teaching, thematic discussions, etc., will have a positive impact on online learning satisfaction	4.0	0.755	high
NO.11	The special methods used by teachers in online teaching will have a positive impact on satisfaction with online learning	4.2	0.711	high
Total		4.1	0.625	high

When analyzing the factors influencing XD University students' satisfaction with online learning, including the design of online platforms, it is necessary to conduct research and discussion on the questionnaire results of items 12 to 15. The survey results of this section are shown in the following table:

NO.	Item	M	SD	Interpretation
NO.12	The aesthetic design of platform interface and layout will have a positive impact on online learning satisfaction	3.8	0.844	high
NO.13	The speed of platform network and the stability of the network will have a positive impact on the satisfaction of online learning	3.6	0.926	high
NO.14	The ease of operation in platform design will have a positive impact on online learning satisfaction	3.9	0.591	high
NO.15	The clarity of navigation settings for online platform courses has a positive impact on satisfaction with online learning	3.7	1.031	high
Total		3.7	0.681	high

Through testing, personal performance is positively correlated with satisfaction with online learning. Among them, students have the strongest perception of "willingness to use online platforms", indicating that a positive willingness to use is an important prerequisite for improving satisfaction. However, the relatively low score of "existing learning experience and cognitive level" indicates that students consider their existing knowledge base

and experience to be a relatively weak link affecting the effectiveness of online learning.

Teacher performance (overall $M=4.1$) scored the highest among all dimensions, indicating the strongest correlation with student satisfaction. In particular, the highest scores were obtained for "special methods adopted by teachers in online teaching" ($M=4.2$) and "stable psychological tendencies of teachers" ($M=4.1$), indicating that teachers' teaching innovation ability and positive teaching attitude are crucial for improving student satisfaction.

Platform design (overall $M=3.7$) is also positively correlated with satisfaction, but the overall score is the lowest among the three dimensions. Among them, "operational convenience" ($M=3.9$) scored the highest, indicating that the platform's ease of use has been recognized by students. However, the scores for "network speed and stability" ($M=3.6$) and "course navigation clarity" ($M=3.7$) are relatively low, revealing that technical stability and navigation design are the main shortcomings of the current online learning platform experience.

The survey subjects of this study include four different majors. To investigate whether there are differences in online learning satisfaction among students from different majors, this study also used the independent sample t-test method for comparison. The test results are shown in the table below.

Item	Major	n	M	t	Sig.
The effect of using online learning platforms for learning is very good	Education major	50	3.98	0.781	0.531
	Foreign	35	3.75		
	Language Major				
	Mechanical				
	Engineering major	70	4.02		
High acceptance of online learning platforms	Business			0.40	0.561
	Administration major	60	4.05		
	Education major	50	4.11		
	Foreign	35	3.90		
	Language Major				
We will continue to use online learning platforms for learning in the future	Mechanical	70	3.98	0.671	0.677
	Business				
	Administration major	60	3.89		
	Education major	50	4.11		
	Foreign	35	4.04		
Total	Language Major			0.598	0.349
	Mechanical				
	Engineering major	70	3.79		
	Business				
	Administration major	60	4.06		

According to the table above, there is no significant difference in overall satisfaction with online learning among students from different majors ($t=0.598$, $\text{sig}=0.349$). When considering the different dimensions of satisfaction with learning, there were no significant differences in all aspects.

To investigate whether there are differences in online learning satisfaction among college students with different educational backgrounds, this study used independent sample t-test to compare different educational backgrounds. The test results are shown in the table below.

Item	educational background	n	M	t	Sig.
The effect of using online learning platforms for learning is very good	bachelor degree	135	3.90	0.527	0.566
	Master or above	80	3.77		
High acceptance of online learning platforms	bachelor degree	135	4.01	0.765	0.346
	Master or above	80	3.96		
We will continue to use online learning platforms for learning in the future	bachelor degree	135	4.13	0.821	0.736
	Master or above	80	3.80		
Total	bachelor degree	135	3.79	0.817	0.727
	Master or above	80	3.85		

According to the table above, the Sig values of undergraduate and graduate students' satisfaction with online learning in various dimensions are between 0.346-0.736, all greater than 0.05. Therefore, it indicates that there is no significant difference in satisfaction with online learning between undergraduate and graduate students.

4. CONCLUSION

This study aims to explore the relevant factors that affect the satisfaction of XD University students with online learning. The data analysis results indicate that students' personal learning performance, teacher teaching quality, and platform design are significantly positively correlated with online learning satisfaction. Among them, the correlation between teacher teaching quality is the highest, followed by personal learning performance, and the correlation between platform design is relatively low. This section will delve into these core findings and explore their theoretical and practical significance.

The core role of teacher's teaching quality

This study found that the correlation between teachers' teaching quality and students' satisfaction with online learning is the closest. This result is consistent with the study by Cheng et al. (2023), who also found that teachers' teaching methods are the most important factor affecting satisfaction with blended learning. In an online environment, teachers and students are physically isolated, and the role of teachers shifts from being direct transmitters of knowledge to being designers, guides, and motivators of learning. Stable psychological tendencies, professional abilities, and innovative teaching methods (such as situational teaching and thematic discussions) of teachers can not only clearly convey knowledge, but also build a positive "teaching presence" (Garrison et al., 2000), effectively compensating for the shortcomings of online interaction and stimulating students' interest and participation in learning. This explains why "special methods adopted by teachers in online teaching" score the highest, as these methods directly enhance students' learning experience and emotional connection.

2. Fundamentals and Shortcomings of Platform Design

The quality of platform design is significantly correlated with satisfaction, but the overall score is the lowest, especially with "network stability" and "navigation clarity" becoming obvious shortcomings. This discovery confirms the core viewpoint of the Information System Success Model (DeTone&McLean, 2003), which states that system quality is the foundation of user satisfaction. An unstable or difficult to operate platform can constitute a learning barrier, increase students' cognitive load, and thus reduce satisfaction. Although students acknowledge the platform's 'ease of operation', the lack of technological stability indicates that technological infrastructure remains a priority issue to be addressed in improving the online learning experience. This is consistent with the viewpoint pointed out by UNESCO (2021) that online learning in developing countries is constrained by technological conditions, and also provides direction for the technological upgrading of XD University and similar universities.

The Importance of Personal Learning Performance

The personal learning performance of students, especially their willingness to use and learning motivation, is highly correlated with

satisfaction. This can be explained by the humanistic learning theory (Maslow, 1987), which emphasizes learners' intrinsic motivation and subjective initiative. When students have strong learning motivation and willingness to use it, they are more likely to actively engage in learning, overcome difficulties in online learning, and thus achieve higher satisfaction. In contrast, the score of "existing learning experience and cognitive level" is relatively low, indicating that students generally realize that their knowledge foundation and self-learning ability are the key factors affecting learning effectiveness, which also provides a basis for universities to carry out learning strategy guidance.

The results of this study generally support the conclusion of existing literature that teachers, platforms, and individuals are the three core dimensions that affect online learning satisfaction. However, this study further clarified that in the specific context of XD University, the ranking of the correlation between these three factors is: teacher>individual>platform. This ranking may reflect that the school has done well in teacher training and motivation, while there is still room for improvement in technology investment and platform maintenance. Compared with the study by Zhang et al. (2023), this study also confirms the importance of teaching factors, but may reveal more specific challenges to technological factors.

The innovation of this study lies in: (1) developing a survey questionnaire with good reliability and validity suitable for the context of XD University through literature review and expert consultation; (2) A comprehensive research model was constructed that includes multiple dimensions such as teachers, individuals, and platforms, systematically examining the correlation between various factors and satisfaction. On a practical level, the findings of this study provide specific and actionable guidance for XD University and similar universities to optimize the quality of online teaching, emphasizing the importance of returning to the essence of education - focusing on the guiding role of teachers and the subjective experience of students - in the context of increasingly mature technology.

This study also has some limitations. Firstly, the research sample was only from one university in Xi'an (XD University), and the generalizability of the conclusions needs to be further verified in a wider range of regions and

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Authors' Biography:



The interest in the topic of online learning experience for college students first stems from its necessity for the digital transformation of higher education. It is the core basis for testing the effectiveness of online teaching, optimizing teaching modes, and ensuring the quality of education. However, current online teaching in universities still faces problems such as insufficient teaching interaction, unstable platform experience, and prominent individual learning differences, resulting in uneven student learning experiences and difficulty in improving learning satisfaction, which hinders the improvement and efficiency of online education. The current situation that combines practical value and existing shortcomings makes this study highly practical and meaningful for research.