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Factors Affecting User Satisfaction with Smart Education Platforms in Local Primary Schools: Insights from a Grounded Theory Study

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Abstract: This study examines the factors influencing user satisfaction with local primary education smart education platforms. Data from interviews with 21 were coded by the grounded theory, constructing a theoretical model. The main influencing factors include resource content, platform functions and features, security, and user experience. Among these, security is the prerequisite for users to trust the platform. Resource content, platform functions and features, and user experience form a complex dynamic model that independently influences user satisfaction while affecting satisfaction through interactions. The quality and relevance of resource content directly impact the user learning experience. Platform functions and features, such as usability and service quality, determine the efficiency and comfort of user interaction. User experience encompasses subjective evaluations and emotional responses to resource content and platform functions. These factors mutually reinforce each other and collectively contribute to the formation of user satisfaction, ultimately determining user evaluation and loyalty to the platform.

Keywords: Urban Primary Education, Smart Education Platform, Grounded Theory, User Satisfaction, Influencing Factors, Security

1. Introduction

In recent years, with the rapid development of information technology, China has made significant progress in educational informatization. The "National Medium- and Long-Term Education Reform and Development Plan Outline (2010-2020)" and the "Ten-Year Development Plan for Educational Informatization (2011-2020)" set strategic goals for establishing public educational resource service platforms, emphasizing the use of information technology to support the entire educational process. Additionally, the "Implementation Plan for Accelerating Education Modernization (2018-2022)" clearly states that informatization will play a crucial role in promoting educational equity and improving the quality of education. The government's continued investment in educational information infrastructure, particularly in rural and remote areas, has facilitated internet access and upgraded school computer equipment. These measures have laid a solid foundation for the digital transformation of education.

Against this backdrop, educational administrative departments and schools have actively introduced high-quality digital resources, such as electronic textbooks and online courses, to enrich teaching content and enhance students' learning experiences. The "13th Five-Year Plan for Educational Informatization" and the "Educational Informatization 2.0 Action Plan" explicitly propose the construction of widespread "Internet + Education" platforms to promote the sharing and application of educational resources. Furthermore, these plans emphasize improving teachers' abilities to apply information technology to implement educational informatization policies effectively.

Within this wave of educational informatization, local primary and secondary school intelligent education platforms have gradually proliferated across various regions, becoming one of the key tools for promoting educational equity and improving educational quality. Local educational administrative departments have built and managed intelligent education platforms to provide schools and teachers with personalized teaching and learning resources and other auxiliary support for teaching and management. However, despite the widespread coverage of intelligent education platforms in local primary and secondary schools, there are still many challenges in their development, such as incomplete platform functions, insufficient content resources, and poor promotional and application outcomes. For instance, in Hebi City, the activation rate of platforms at the district and county level is only 46% to 54%. In the academic realm, while previous studies have explored user satisfaction with intelligent education platforms, most have focused on higher education or online learning platforms, and research on user satisfaction concerning local primary and secondary school education platforms remains relatively scarce.

This study takes user satisfaction with local primary and secondary school intelligent education platforms as the focal point and explores the multidimensional factors affecting user satisfaction and their interactive mechanisms. Through in-depth interviews with 21 respondents from diverse backgrounds and utilizing grounded theory methodology, this research aims to construct a theoretical model and conduct data analysis to identify the key factors influencing user satisfaction with using these platforms. Furthermore, this study seeks to clarify how these factors interact, providing theoretical support for local educational management departments to improve the design and implementation of intelligent education platforms.

2. Literature Review

2.1 Research on the Construction of Intelligent Education Platforms for Primary and Secondary Schools

With the deepening of digital transformation, intelligent education platforms in China's primary and secondary education fields have become an important support tool for educational modernization. They are a key area of national policy and a critical factor in improving the quality of education and promoting educational equity (Li Tong, 2023; Wang Maosheng, 2020). These platforms have effectively facilitated the digitalization of teaching resources and information sharing, and provided intelligent and scientific services for education and teaching (Chen Ye, 2023; Xu Bibo et al., 2023). Specifically, these platforms aim to break down data silos in the education sector, prevent redundant construction, and optimize resource allocation (Wang Maosheng, 2020; Jin Zhiguang et al., 2022). Intelligent education platforms led by education authorities generally provide stable technical support, ensure data security, and promote the efficient collaboration of educational information (Li Hongkai et al., 2023). Through big data and intelligent recommendation systems, these platforms assist students in acquiring tailored educational resources based on their learning progress and interests, thus supporting personalized learning (Yin Baoyuan et al., 2018; Li Wei et al., 2022).

In constructing intelligent education platforms for local primary and secondary schools, scholars emphasize the construction principle of "demand-driven, application-oriented," ensuring that platform construction effectively responds to the needs of various stakeholders (Li Tong, 2023). These stakeholders include students, teachers, and parents, ensuring the platform's functions and content meet diverse educational demands (Zhao Huichen et al., 2018; Li Yu & Sun Tao, 2022). On one hand, by building student learning data and intelligent learning recommendation systems, the platform provides personalized learning support for students and schools, fostering holistic development (Tian Yongjian et al., 2022; Li Wei et al., 2022). On the other hand, it is an important means to promote teaching innovation and enhance teacher-student interaction (Pu Zaiyi, 2019; Li Tong, 2023). The platform also supports teaching management and school evaluation processes (Xu Bibo et al., 2023).

2.2 Evaluation and User Satisfaction Research of Intelligent Education Platforms in Primary and Secondary Schools

In both domestic and international research on the evaluation of intelligent education platforms, quality evaluation systems typically encompass dimensions such as content, technology, teaching, and service (Gong Zhaohua et al., 2018; Zhao Huichen et al., 2018). The online education evaluation standards proposed by Quality Management (QM) organizations, including course design, learning objectives, teaching resources, and other dimensions (Course Design Rubric Standards, 2021), can serve as valuable references for this study. These models emphasize consistency and standardization in the platform's technological architecture, user experience, and interactive design.

Research on user satisfaction evaluation has mainly focused on the factors influencing education platforms. It is generally agreed that a user satisfaction model can be established across four dimensions: usability, interaction quality, system quality, and service quality. Improving the platform's usability, performance, and functionality can enhance user satisfaction (Chen et al.,

2020; Cheng & Xiao, 2019). Based on these four dimensions, some scholars point out that information quality is a key factor influencing user satisfaction (Cheng & Xiao, 2019). Other studies suggest that user expectations, perceived platform quality, perceived platform value, and platform image, along with their individual factors, significantly affect user satisfaction (Cui, 2020). Improving interface design can also enhance user satisfaction (Korableva et al., 2019).

Regarding the intention to continue using the platform, perceived usefulness, trust, and habit can be considered in research on factors influencing users' intentions to continue using the platform. Trust in the platform and its perceived usefulness influence user satisfaction (Zhang & Zhang, 2019). Moreover, the platform's service quality, perceived interactivity, and perceived added value have a significant positive effect on user expectation confirmation and perceived usefulness, which in turn, by enhancing user satisfaction, promote users' intentions to continue using the platform (Li, Yang, & Chen, 2022). These findings provide valuable insights and different perspectives on the factors influencing user satisfaction. They highlight the importance of platform usability, service quality, information quality, interface design, perceived trust, and perceived usefulness in determining user satisfaction. These findings offer valuable guidance for improving intelligent education platform user satisfaction and user experience.

Although previous studies have thoroughly explored the functions of intelligent education platforms and user satisfaction (Zhang & Zhang, 2019), most have focused on the platform's technical features or single dimensions (e.g., system stability, information quality, etc.). However, there is still a lack of systematic research on the interactive effects of multiple factors, such as resource content, platform functions, user experience, and security, in the context of local primary school intelligent education platforms. Therefore, this study uses grounded theory to fill this gap by analyzing the multidimensional factors and their interactive mechanisms influencing user satisfaction with local primary school intelligent education platforms.

3. Research Methodology

3.1 Sample Selection

Interviews were conducted by selecting appropriate respondents based on the research objectives and designing targeted interview outlines for communication, while recording the entire process. The questions in the interview outline should be clear and focused, with attention paid to communication skills in order to delve deeply into the respondents' underlying information. The interview participants in this study were 21 users from Zhejiang, Henan, and Chongqing. The criteria for selecting these samples included: possessing certain language comprehension and expression abilities, having used different types of local primary school intelligent education platforms, and being available and willing to participate in the interview. The interviews aimed to understand users' behavior in using local intelligent education platforms, and, through these interviews, to gain deeper insights into their needs, usage habits, and user experiences. The analysis focused on identifying the key factors that may affect user satisfaction before, during, and after use, and further refining the indicators related to user satisfaction evaluation.

The characteristics of the 21 sample users, who varied in terms of educational background, geographical location, age, and profession, are shown in Table 1.

Table 1 Basic Information of the Sample

Serial Number	Gender	Educational Background	Years of Experience
1	Female	Bachelor's	7
2	Female	Bachelor's	7
3	Female	Bachelor's	20
4	Female	Bachelor's	10
5	Female	Master's	11
6	Female	Bachelor's	23
7	Female	Bachelor's	10
8	Female	Bachelor's	10
9	Female	Bachelor's	1
10	Female	Bachelor's	4
11	Female	Bachelor's	4
12	Male	Bachelor's	5
13	Male	Bachelor's	32
14	Male	Bachelor's	40
15	Male	University	32
16	Female	Bachelor's	10
17	Female	Unknown	Unknown
18	Female	Bachelor's	10
19	Female	Unknown	Unknown
20	Male	Primary School	Unknown
21	Male	Primary School	Unknown

3.2 Interview Outline

Interviews were conducted by selecting appropriate respondents based on the research objectives and designing a targeted interview outline for communication, while recording the entire process. The questions in the interview outline should be clear and focused, emphasizing communication skills to delve deeply into the respondents' underlying information.

Before the interviews began, the researcher established initial communication to ensure that the participants fully understood the purpose and process of the study, while also building a trust-based relationship. Each interview lasted between 20 and 30 minutes to ensure respondents could provide detailed information without feeling fatigued. The interviews were semi-structured and conducted online and offline, lasting for ten days.

The interview outline consisted of a set of guiding questions, which were dynamically adjusted based on the respondents' feedback, including but not limited to:

- **Background information of the teacher or student:** This includes the subject taught, years of teaching experience or learning experience, teaching or learning anecdotes, etc.
- **Evaluation of satisfaction with the intelligent education platform:** This includes the platform's strengths, features that users find satisfactory, etc.
- **Problems and dissatisfaction encountered while using the platform.**

- **Conceptualization of an ideal intelligent education platform:** Desired features, structure, portability, etc.

3.3 Data Collection and Analysis

Through this interview method, the study aims to comprehensively collect and analyze the perspectives of users and relevant stakeholders of intelligent education platforms to provide targeted improvement suggestions for enhancing user experience and promoting the platform's continuous development. After the interviews, the recorded audio data were promptly transcribed into text and refined by the respondents. The final output was organized according to the interview content and saved as 21 text files. To ensure the accuracy and reliability of the information, any ambiguous or unclear responses were cross-checked and confirmed. The entire research process strictly adhered to ethical guidelines, protecting the privacy and data security of the respondents.

4. Data Analysis

4.1 Grounded Analysis Process

This study adopted the three-stage coding method of grounded theory to facilitate theory induction and construction. This analysis process includes open, axial, and selective coding, aiming to extract key concepts from the raw data and construct a theoretical framework.

By employing the three-stage coding process of grounded theory, this study ensures the gradual construction of a theoretically robust framework closely linked to actual data. This methodology emphasizes the inductive and iterative nature of the research process. It fosters close alignment and interaction between theory and data, enhancing the research findings' originality and depth. The specific process of grounded analysis is illustrated in Figure 1.



Figure 1 Specific Process of Grounded Analysis

4.2 Open Coding

Open coding constitutes a fundamental analytical stage in grounded theory methodology, primarily aiming to identify potential concepts and categories in the early phase of qualitative data analysis. During the open coding process, researchers label significant concepts by identifying keywords, phrases, and sentences in the data and abstracting these concepts into broader categories. This process reveals patterns and relationships within the data (Charmaz, 2006). This coding method emphasizes building a theoretical framework based on the data rather than imposing a preconceived theory onto the data. Therefore, open coding is crucial in generating theory from

actual data, allowing researchers to explore the research topic from an unbiased perspective and promoting the inductive construction of theory (Glaser & Strauss, 1967).

For the 24 collected interview texts, this study employed initial coding (or open coding) for a detailed analysis of 21 texts, while the remaining three texts were used to test theoretical saturation. The open coding process consists of three steps: (1)Extracting original statements, where 349 original statements were extracted and numbered from 21 texts named with uppercase letters, such as extracting five original statements from text A, named A1, A2, A3, A4, and A5; (2)Refining initial concepts, where initial concepts were assigned to the original statements, then similar concepts were merged, resulting in 60 initial concepts; (3)Integrating basic categories, where the 60 initial concepts were classified and integrated into 46 basic categories, as illustrated in Table 2.

Table 2 Results of Open Coding Primary Concepts (Example)

Initial Category	Frequency	Original Statements (Partial)
b1 Quality of Resources	16	What satisfies me most about this platform is that it provides a large number of premium courses, making lesson preparation more convenient for us teachers (quality and richness of resources).
b8 Novelty of Resources	6	The courseware resources need to be innovative.
b11 Accessibility of Resources	7	Can students also download some materials from it themselves?
b12 System Completeness	8	It is precisely because this platform has a few things that could be improved.
b13 System Stability	16	The platform, possibly because of its extensive coverage, has a significant drawback: its system could be more stable in speed.
b14 System Timeliness	13	Feedback was given to the school, but it couldn't be resolved. The school said it was a system problem that could not be resolved for our class, so it never met the requirements.

4.3 Axial Coding

Axial coding is a further analysis and refinement of open coding results. Establishing connections between different categories identifies the internal logical relationships among them, thereby uncovering higher-level axial categories (Figge, Frank, Givry, et al., 2017).

This study summarized the 46 categories obtained from Open Coding, ultimately forming 14 subcategories and six main categories. The main categories are educational content and resources, , security, user support, personalization and adaptability, and accessibility and convenience. The specific details are shown in Table 3.

Table 3 Example of Axial Coding

Main Category	Subcategory	Open Coding	Category Connotation
	Quality of Educational Resources	Quality, relevance, interest, novelty, effectiveness of resources	Ensure high-quality educational content that is relevant and engaging for learners and meets diverse learning needs and styles.

Main Category	Subcategory	Open Coding	Category Connotation
Educational Content and Resources	Accessibility of Educational Resources	Accessibility, free availability, shareability of resources	Resources, including accessible and shareable resources, are easy to access and use, promoting broader learning participation.
	Diversity of Educational Resources	Richness, comprehensiveness of resources	It provides various types and forms of educational resources to meet learning needs across different fields and levels.
	Localization of Educational Content	Localization of resources	Integrating educational content with local culture and needs to enhance relevance and acceptance.
Platform Technical Characteristics	System Functionality and Stability	Completeness, stability, and timeliness of the system	Ensuring the platform runs stably, with comprehensive features and responsive performance, for a smooth user experience.
	Interaction Design and User Experience	Portability of operation, page design, layout rationality, simplicity, ease of use, convenience, interactive design, practicality, comprehensiveness, user independence	We optimize user interface and experience design to ensure usability, efficiency, and satisfaction, supporting users to complete tasks independently.
	Technological Innovation and Updates	The foresight of technology, the usefulness of functions, the immediacy of functions, data processing, and analysis	Continuous platform updates with cutting-edge technology, providing diverse, helpful, and timely function updates to maintain technological leadership and meet evolving user needs.
Security	Data and Access Security	Security	Ensuring platform security and data protection.
User Support	User Support and Training	User operation training	Providing practical user training and support to help users understand and use the platform, enhancing user capability and confidence.
	Customer Service	Service attitude and professionalism of technical staff, timeliness of service, customer service options	We are providing professional, timely customer service to build user trust.
Personalization and Adaptability	Personalized Services	Feasibility of personalized push, personalized functions, user-friendly features, feasibility of humanistic care	It provides services that meet personalized needs and preferences, including learning paths, content, and support to enhance the learning experience.

Main Category	Subcategory	Open Coding	Category Connotation
	User Adaptability and Preferences	User adaptability, platform comprehensiveness, platform coverage, visual protection	The platform can adapt to different user needs and preferences, including users of different ages, abilities, and backgrounds, promoting broader participation and satisfaction. Ensuring all users can easily access and use the platform, maintaining user-friendliness and accessibility regardless of technical ability or access conditions.
Accessibility and Convenience	Platform Convenience	Ease of login, shareability of accounts, choice in usage, functional usability options	

4.4 Selective Coding (Level Three Coding)

Selective coding is based on the results of open coding and axial coding. It deeply explores the relationships between significant categories, forming core categories. These core categories are systematically related to other categories, gradually improving their connections, thus providing the conditions for model construction (Li Cairong, Hu Yani, Xue Chenlei, 2020). This stage aims to identify the core concepts that can explain the entire research phenomenon and systematically link other categories to these core concepts. Selective coding ensures the consistency and integration of the theoretical framework, presenting the research findings as an organic whole that reflects the essence of the research phenomenon.

Based on Open Coding and Axial Coding, this study repeatedly examined and analyzed the relationships among the six main categories: educational content and resources, platform technical characteristics, security, user support, personalization and adaptability, and accessibility and convenience. The core category was "Evaluation Mechanism ." The relationships among the main categories in this study are illustrated in Figure 2.

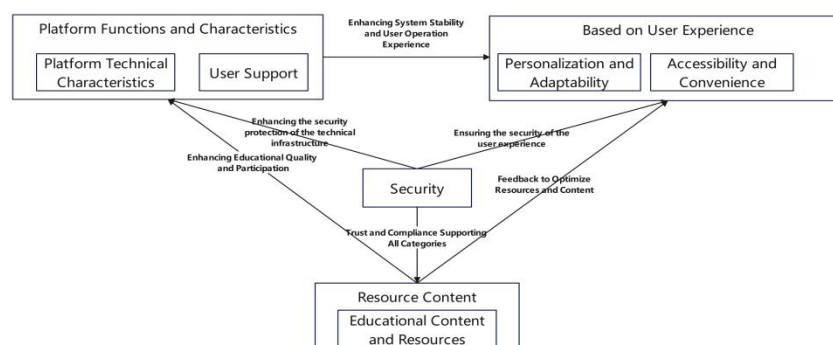


Figure 2 The logical relationships between the main categories

4.5 Theoretical Saturation Test

In qualitative research, theoretical saturation is crucial for assessing research quality. Achieving theoretical saturation means that during the data analysis process, new data introduce no new themes, categories, or concepts, and the existing theoretical framework is sufficiently supported, with no substantial information emerging that would contribute to the already constructed theory

(Glaser & Strauss, 1967). The author used three original interview materials to test the theoretical saturation. Through in-depth analysis of these supplementary materials, it was found that they were highly consistent with the earlier research results, generating no new categories or concepts and no new associations formed among the existing categories. This result indicates that the previous systematic analysis has fully explored and understood the patterns and categories in the data, achieving theoretical saturation. Based on this finding, the relational structure established in this study is stable, and the theoretical framework is reliable, providing a solid foundation for research on user satisfaction in smart education platforms.

5. Results and Discussion

5.1 Results

A specific analysis of the main categories revealed that in the construction of smart education platforms, the six main categories—"educational content and resources," "platform technical characteristics," "user support," "personalization and adaptability," "accessibility and convenience," and "security"—interact and form three broader categories: content resources, platform functions and characteristics, and user experience-based perception. The interactions between the six main and three comprehensive categories constitute a complex ecosystem. The interactions among these categories are not unidirectional and linear but form a multidimensional, dynamically interactive network that includes feedback loops and self-reinforcing mechanisms. Security plays a fundamental and cross-supportive role in this ecosystem, ensuring the stable operation of the entire platform and maintaining user trust. Based on the storyline of the categories, this study constructs a model for the mechanisms influencing user satisfaction with smart education platforms in local primary education.

5.1.1 Three Comprehensive Categories

Content Resources Category: This involves the quality, diversity, and personalization of educational materials, which directly determine the effectiveness of educational delivery. High-quality content is crucial for improving teaching outcomes and enhancing learner engagement. This not only requires content to be targeted and engaging but also demands that the presentation of content align with learners' cognitive patterns.

Platform Functions and Characteristics Category: This category focuses on the platform's technical implementation, including system stability, the usability of interactive design, and its direct impact on the end-user experience. A technologically advanced, stable, and user-friendly platform can significantly enhance the efficiency of educational content delivery and promote learner engagement.

User Experience-Based Perception Category: This category centers on the direct interaction experience between users and the platform, focusing on personalized services, user adaptability, and the overall convenience of the platform, which includes providing users with customized learning paths and optimized interface design to meet the needs of learners from diverse backgrounds and with varying requirements.

Security plays a crucial role in the interactions among these categories. It is not only a necessary condition for platform operation but also the foundation for building user trust and ensuring

sustained user engagement. In educational platforms, the concept of security extends to data protection, the maintenance of privacy rights, and the necessity of providing a safe learning environment for users.

5.1.2 Relationships Among the Six Main Categories

Regarding educational content and resources and platform technical characteristics, the quality and diversity of educational content and resources are the foundation of teaching effectiveness and learning experience. The optimization of this category depends on the support of platform technical characteristics, particularly data processing capabilities, cloud services, and response times. From interactive videos to simulated experiments, the advancement of technical characteristics directly affects the presentation of educational content. At the same time, upgrading technical characteristics is driven by content demands, as evidenced by the growing pursuit of dynamic and personalized content.

The security category holds a crucial position as it is the fundamental premise for users to trust a smart education platform. A platform that can ensure user data security and privacy protection will more easily gain user trust and promote long-term engagement and satisfaction.

Regarding platform technical characteristics, user support, and security, each iteration of platform technical characteristics not only requires users to understand new features and tools but also demands that the platform provide a corresponding support system to address user inquiries, train users, and handle technical obstacles. The security challenges brought by technological advancements, such as ensuring data encryption and compliance with privacy regulations, require the platform to enhance user security and privacy protection alongside technological updates.

User support, security, personalization, adaptability, user support, and security assurance make users more inclined to use the platform's personalized services. Security becomes the prerequisite for a personalized experience; only when users have confidence in the platform's security and privacy protection will they be willing to interact more deeply and provide personalized data to customize their learning experience. This trust is the foundation for achieving personalized learning paths and offering customized learning content.

From the perspective of personalization and adaptability, as well as accessibility and convenience, the effective implementation of personalization and adaptability features requires ensuring that the platform is accessible to all potential users. For personalization and adaptability, the ideas from user groups and the potential access barriers they might face, including technical and physical obstacles, from the beginning of platform design. Accessibility and convenience play a crucial role here, ensuring that users can learn at their own pace, according to their interests and learning styles.

In terms of accessibility and convenience, as well as educational content and resources, the platform's ease of use and accessibility features ensure that educational resources can be widely disseminated and effectively utilized. Ease of use and convenience are not just about the technical implementation but also about the core of the user experience, which enables users to access the most suitable resources anytime and anywhere. This accessibility is crucial for motivating active user participation and sustaining long-term learning.

Through the above analysis, each category of a smart education platform does not exist in isolation but is interconnected and co-evolves within an interactive dynamic system. In this ecosystem, technology serves content delivery and ensures the security and personalization of the user experience. Personalization and adaptability drive the demand for platform usability, and ultimately, all these elements contribute to enhancing the dissemination efficiency of educational content and teaching effectiveness.

5.2 Discussion

In existing research on innovative education platforms, many studies focus on different evaluation criteria, technical features, and aspects of user experience. However, most of these studies concentrate on a single dimension or static analysis, lacking a systematic and multidimensional interactive analysis. Compared to the existing literature, this study constructs a more complex and dynamic ecosystem by delving into the interactions among six key categories—educational content and resources, platform technical features, user support, personalization and adaptability, accessibility and convenience, and security.

From Content Resources to Platform Functions and Characteristics: The quality of educational content directly drives platform technology development to ensure effective content delivery. Simultaneously, the platform must continually innovate to meet educational content's growing complexity and richness.

From Platform Functions and Characteristics to User Experience-Based Perception: Enhancements in technical features aim to improve the direct user experience. For example, increasing system response time and reducing failure rates can significantly enhance user satisfaction. User feedback on the platform becomes a crucial input for functional improvements.

From User Experience-Based Perception to Content Resources: User experience feedback influences how content providers iterate and optimize educational materials. Learners' needs and preferences become the basis for adjusting and improving educational content.

In this framework, security spans all categories, forming a supportive foundation that safeguards the high quality of content resources, provides a stable operational environment for advanced platform technologies, and ensures a secure and worry-free user experience. In smart education, this cross-category security is crucial for continuously attracting and retaining users, thereby achieving long-term educational goals. Accordingly, this study constructs the "Smart Education Platform User Satisfaction Evaluation Model." This model is based on the depth and breadth of educational content, achieved through advanced platform technical characteristics and optimized user experience, aiming to achieve high user satisfaction. Security serves as the foundational support of the model, ensuring users' sense of safety and trust while using the platform, thereby promoting the smart education platform's long-term success and sustainable development.

Compared to previous research, such as the evaluation criteria for innovative education platforms proposed by Li Tong (2023), which emphasize the quality of content and resources, platform stability, and security, most studies discuss these dimensions separately. In contrast, the PACTS quality evaluation model constructed by Gong Zhaohua et al. (2023) separates dimensions like content, technology, teaching, service, and art when evaluating educational platforms. This study, however, integrates these dimensions into a more comprehensive framework, viewing platform features, user experience, and content resources as mutually supportive and interacting key

factors. This interactive analysis provides a new perspective for optimizing innovative education platforms.

Additionally, this study highlights the importance of security as a platform's infrastructure and considers it a core factor in ensuring user trust. This contrasts with Zhao Huichen's (2023) view, which treats security as an additional platform dimension. While security may not fall within the explicitly perceived realm of users, this study argues that users' concerns about platform security are significant and should be placed at the system's center, serving as a prerequisite for personalized services and long-term user engagement.

This study also has limitations, including an incomplete sample selection and unverified reliability and validity of the three-level coding in grounded theory. Future research should expand the geographic scope and sample size and enhance the reliability and validity of the theoretical framework by consulting experts and conducting repeated verifications.

Ethics Committee

The Ethics Committee of China Jiliang University reviewed the interview component of this study and confirmed that ethical approval was not required. All procedures in this research were conducted according to the guidelines and regulations provided by the Ethics Committee of China Jiliang University.

Informed consent statement

Oral informed consent was obtained before the interviews. Informed consent has been obtained from the legal guardians. Additional informed consent was obtained from all individual participants in the article who provided identifying information.

Data Availability Statement

The datasets generated during and analyzed during the current study are available from the corresponding author on reasonable request.

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