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The Value, Challenges, and Pathways of Digital Empowerment in Building University "One-Stop" Student Communities

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Abstract

Under the strategic backdrop of digital transformation in education, the "one-stop" student community in universities, as a key site for fulfilling the fundamental task of fostering virtue through education, has made intelligent development an inevitable trend. From the theoretical perspectives of digital empowerment and precise governance, this paper systematically explores the value logic, practical challenges, and pathways for advancing the construction of such digitally empowered "one-stop" student communities in higher education. The study finds that digital empowerment demonstrates significant value in enhancing service precision, deepening immersion in ideological and political education, and fostering multi-stakeholder collaboration by reengineering management models, optimizing resource allocation, and innovating educational scenarios. However, practical implementation faces multiple challenges, including discrepancies in administrative perception, insufficient alignment between technological application and educational needs, and difficulties in meeting complex student demands. In response, this paper proposes systematic pathways such as building a consensus on education-oriented digitalization, establishing a collaborative and efficient data governance framework, and innovating precisely tailored smart service models. The aim is to provide theoretical insights and practical guidance for building smart communities that are data-driven, responsive, and effective in nurturing student development.

Keywords

Digital Empowerment; One-stop Student Community; University Governance; Resilient Governance.

1. Introduction

Within the broader context of digital transformation in education, the university "one-stop" student community—a critical site for fulfilling the fundamental mission of fostering virtue and nurturing talent—is undergoing a structural shift from a traditional physical space toward an intelligent and digitally integrated model. Educational digitalization serves as a vital pathway for China to explore new avenues in educational development and establish new competitive advantages [1]. In light of this, a key challenge facing university student services is how to systematically deepen the integration of digital technologies with student community governance and ideological-political education, in order to construct a smart educational environment that is adaptive, collaborative, and sustainable. Grounded in the theoretical perspectives of digital empowerment and precision-oriented governance, this paper aims to systematically clarify the underlying value logic of digitally empowering the "one-stop" student community, analyze the practical difficulties encountered in its implementation, and explore actionable development pathways. The goal is to provide insights and references for enhancing the educational effectiveness of university student communities.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202512_8(12).0050

2. The Value of Digital Empowerment in Building University "One-Stop" Student Communities

(1) Enhancing the Precision and Intelligence of Student Community Services

Traditional The empowerment of university "one-stop" student communities by digital technology represents more than just an innovation in management tools. It signifies a fundamental shift in management models—from traditional experience-based approaches rooted in bureaucratic structures to an intelligent, data-driven management paradigm. This transformation facilitates the evolution of the student community space from a mere transactional service platform into a holistic educational environment.

From the perspective of management entities, digital platforms effectively integrate resources across university departments, fostering a new ecosystem for educational management characterized by cross-system collaboration and end-to-end process integration. By establishing unified data hubs and operational coordination centers, digital technology effectively breaks down long-standing "information silos" and "functional fragmentation" between departments such as student affairs, academic administration, and logistics. This not only restructures service processes and optimizes the allocation of resources, thereby improving the efficiency of handling student affairs, but also strengthens the collaborative responsibility and functional synergy among various departments in the educational process. Furthermore, when addressing student emergencies or complex governance situations, these integrated systems enable the formation of agile response mechanisms through data fusion, thereby enhancing the overall coherence and resilience of student management.

From the perspective of student participation, digital platforms reshape the pathways for students to engage in community governance, steering the management structure towards a model of co-construction, co-governance, and shared benefits. Through digital channels such as mobile applications, virtual communities, and real-time feedback systems, students can participate more deeply and regularly in the deliberation, consultation, and oversight of community matters. This form of technology-enabled participatory governance not only strengthens students' sense of agency and belonging but also contributes to the continuous optimization of management and service processes. It helps cultivate a more inclusive, responsive, and open campus culture. Consequently, it provides a tangible and dynamic setting for nurturing high-quality talent equipped with digital literacy, a collaborative spirit, and a sense of social responsibility.

(2) Facilitating Targeted and Immersive Ideological and Political Education in Student Communities

Digital empowerment is profoundly reshaping the practice of ideological and political education within university "one-stop" student communities. It is driving its evolution from a traditional "one-size-fits-all" model toward a new, intelligent educational paradigm that integrates targeted delivery with immersive experience. This transformation is not merely a simple addition of technology; rather, it represents a systematic reconfiguration of the logic behind educational resource allocation, delivery methods, and student engagement, all built upon digitalized educational spaces.

At the level of targeted education, the establishment of data-driven perception and response mechanisms has enabled a transition from generalized provision to precision-focused intervention. Specifically, by leveraging integrated data platforms that consolidate multi-dimensional student trajectory data—such as academic performance, access records, consumption patterns, and psychological assessments—communities can utilize big data analytics to dynamically generate individualized student digital profiles. These profiles not only accurately depict a student's ideological tendencies, interests, and developmental needs but can

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also, through intelligent modeling, identify potential risk factors and growth bottlenecks. This governance loop, powered by a central data platform, allows ideological and political education to shift from universal supply to personalized matching, facilitating the intelligent alignment of resources and proactive intervention. For example, the system can automatically recommend peer tutoring resources to students facing academic difficulties, trigger mental health support pathways for those showing signs of emotional distress, or direct students with specific interests toward relevant theoretical learning materials or practical projects. This precision in provision, grounded in data insights, breaks away from past practices reliant on experiential judgment and broad group coverage, significantly enhancing the relevance, foresight, and effectiveness of ideological and political work.

In terms of immersive experience, digital empowerment is realized through the deep integration of technologies like virtual simulation and the metaverse with the physical spaces and activities of student communities. As indicated in relevant documents, the aim is to "elevate the physical space of the 'one-stop' community into a tangible vehicle for value cultivation" and to "drive the personalization and contextualization of value-guidance practices." The introduction of technologies such as the metaverse, digital twins, Virtual Reality (VR), and Augmented Reality (AR) allows student communities to transcend physical limitations. It enables the creation of highly simulated, embodied, and interactive new arenas for ideological education, where abstract theories and values are transformed into perceptible, interactive, and explorable narrative experiences. For instance, Shanghai Normal University has developed a VR experience hall dedicated to revolutionary heritage. Students can virtually visit historical sites through VR headsets, deepening their emotional connection to revolutionary traditions through immersive observation and interaction [2]. This narrative approach centered on immersive experience breaks the spatiotemporal constraints of traditional classrooms, integrating abstract values into students' lived realities in a tangible, interactive, and embodied manner. This effectively enhances the appeal, impact, and emotional resonance of ideological and political education.

(3) Optimizing the Efficacy of Educational Resource Allocation in Student Communities

Persistent issues in traditional student communities—such as inefficient resource distribution, a mismatch between supply and demand structures, and difficulties in quantitatively assessing effectiveness—are being addressed. Through the establishment of data-driven mechanisms for dynamic resource allocation and performance evaluation, university "one-stop" student communities have achieved significant improvements in the scientific rigor and sustainability of their resource configuration [3].

At the practical level, digital platforms enable the visual management and precise allocation of human, material, and financial resources within communities by building integrated resource databases and intelligent analytical models. For example, Shanghai Jiao Tong University implemented a "layered and categorized" fund management system. Supported by a digital platform, this system employs a dynamic funding mechanism based on "project initiation, process evaluation, and performance-based allocation," linking resource distribution directly to project outcomes in real time. This approach has significantly increased the efficiency of fund utilization and provides empirical evidence for the ongoing adjustment and optimization of educational resources in student communities.

On a systemic level, digital empowerment is driving a fundamental restructuring of community resource supply models. The traditional method of allocating resources based on relatively fixed administrative units is gradually shifting toward a student development demand-oriented, cross-departmental "integrated service resource" model. A pertinent example is the Ministry of Education's "One-Stop" Student Community Cloud Platform. Its modules for "showcasing community achievements" and sharing "excellent case libraries" facilitate the exchange of experiences and resources among different universities regarding smart community

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development, distinctive educational projects, and service innovation models. This fosters the formation of a cross-regional, multi-level resource collaboration network. Such digital platform-based mechanisms for resource integration and sharing not only extend the reach and utility of individual resources but also enhance, at a systemic level, the adaptability and sustainable development capacity of the "one-stop" student community educational ecosystem [4].

3. Practical Challenges in Digitally Empowering the "One-Stop" Student Community

(1) Cognitive Bias in Digital Management and Lagging Mindset Transformation

Firstly, a managerial mindset persists that prioritizes platform construction over institutional integration. Some universities equate digitalization simplistically with hardware investment and system deployment, tending to create visible "showcase digital projects" while underinvesting in the development of "soft environments," such as cross-departmental collaboration mechanisms, data-sharing protocols, and integrated service models. Consequently, although various smart platforms have been established, operational processes often continue along traditional siloed divisions. The phenomenon of information isolation remains unresolved, preventing digitalization from driving the structural optimization of the student community management system.

Secondly, the deep application of digital management tools is constrained by dependence on traditional pathways. Long-established bureaucratic habits lead some administrators to rely predominantly on in-person communication, manual approvals, and experiential judgment. Their use of digital platforms is often limited to basic functions like information retrieval and transaction reporting. For example, student behavioral data may serve merely as post-event records rather than being analyzed through modeling to support proactive risk warning and developmental intervention. Similarly, online application processes might still require multiple stages of offline approval, failing to achieve a truly closed-loop "one-stop online service." This phenomenon of perfunctory system adoption highlights a disconnect between managerial thinking and the potential of digital tools.

(2) Misalignment Between Digital Technology Application and Educational Practice

Firstly, there exists a divergence in understanding between the functional orientation of technological tools and educational objectives. The design of some digital platforms overemphasizes administrative efficiency and process optimization, failing to adequately incorporate pedagogical principles and student development needs. For instance, certain smart student management systems reduce complex student behaviors to quantifiable metrics, using algorithmic models for "risk prediction." However, this approach often struggles to capture the nuanced complexities of student perspectives. Such a tendency toward data simplification risks steering educational work into the pitfalls of technological determinism.

Secondly, issues of data fragmentation coexist with security concerns. Currently, many universities still face the challenge of data silos in their "one-stop" community development. Data systems for academic affairs, student services, logistics, and other departments often operate with inconsistent standards and incompatible interfaces, hindering effective cross-departmental data integration. Furthermore, there is a lack of clearly defined inter-departmental collaboration mechanisms and accountability frameworks specifically tailored for digital education scenarios. This gap results in ambiguous responsibilities and delayed responses during the application of these technologies.

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(3) Inadequate Capacity of Digital Tools to Address Complex Educational Demands

Firstly, the design logic of technological tools is incompatible with the complexity of educational work. Most existing digital platforms rely on standardized functional modules, which struggle to adapt to the personalized and context-dependent characteristics of student development. For example, while the "one-stop" service system at one university integrates over 20 types of administrative functions, it often can only offer standardized procedures when addressing complex student needs requiring deep dialogue and professional judgment—such as psychological crisis intervention or career development guidance. This tendency toward oversimplification through technology may confine educational work to a transactional level, making it difficult to engage with the core aspects of ideological guidance and value formation [5].

Secondly, platform functionality and inter-departmental collaboration mechanisms are inadequately aligned. Although digital platforms theoretically enable cross-departmental data sharing and operational synergy, in practice, factors such as varying levels of digital readiness across departments, inconsistent data standards, and disparate operational processes often prevent the full utilization of platform features. For instance, in one provincial university's experience, an early-warning alert from the student affairs system required approvals across three departments and five procedural steps before leading to concrete action. Such inefficiencies significantly diminish the potential for timely intervention that digital empowerment aims to provide.

4. Pathways for Promoting the Digital Empowerment of University "One-Stop" Student Communities

(1) Building Consensus: Cultivating an Education-Oriented Digital Management Philosophy

The management philosophy underpinning university "one-stop" student communities forms the logical starting point for all practical initiatives. Confronted with the imperatives of educational digital transformation, it is essential to break away from traditional managerial mindsets, fully leverage the enabling potential of digital technology, and foster a genuine digital management ethos. This will drive the evolution of student needs identification and service systems toward intelligent models [6].

The primary task is to facilitate a paradigm shift in perception—from viewing digitalization merely as "technology application" toward understanding it as a means for "reconstructing the educational ecosystem." The prevalent issue of "prioritizing platforms over mechanisms" in current digital development stems from a failure to fully recognize how digital technology reshapes the educational environment of student communities. Universities can draw inspiration from governance concepts like holistic smart governance, adapting them to develop a management philosophy centered on data-driven decision-making, integrated services, and collaborative education. This approach would elevate digital development from a technical project to a strategic component of student affairs.

First, establish a management cycle of "data perception → intelligent response → evidence-based optimization" [7]. To address the current disconnect between technology use and educational needs, the core value of data in managerial decision-making must be strengthened. This involves: 1) enhancing the capacity for needs sensing by integrating multi-source information—such as academic records, behavioral patterns, and service feedback—to build dynamic and accurate needs identification models; 2) optimizing service response mechanisms by deeply aligning data flows with educational workflows, enabling intelligent adjustment of resource allocation and service delivery; and 3) refining outcome evaluation systems through the establishment of multi-dimensional indicators to assess the effectiveness of digital education, thereby forming a continuous improvement loop.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202512_8(12).0050

Second, create a consensus framework characterized by "multi-stakeholder participation, experience-oriented design, and iterative development." The successful implementation of a digital management philosophy for "one-stop" student communities requires building a multi-party collaborative implementation mechanism. This includes improving the digital literacy training system for administrative staff, incorporating digital competence into professional development assessments, and conducting cross-departmental training to break down cognitive and functional barriers in practice. By fostering a healthy ecosystem where administrators skillfully use data, teachers and students actively participate, and technology iterates continuously, the digital management philosophy can be deeply integrated into every phase of "one-stop" community development.

(2) Optimizing Structure: Building a Collaborative and Efficient Data Governance System

A robust data governance system is the institutional guarantee for the effective implementation of digital empowerment in university "one-stop" student communities [8]. In response to widespread issues such as fragmented systems, data silos, and insufficient collaboration in current development efforts, there is an urgent need to construct a data governance framework with clear responsibilities, streamlined processes, and flexible mechanisms. This will provide the structural foundation necessary for achieving precise and intelligent education [9].

First, promote the integration of university student management platforms and the convergence of community data to create a unified smart management foundation. Taking cues from the logic behind building a "city brain," universities need to organically integrate existing disparate systems—such as academic administration, student affairs, logistics, and campus security—into a "one-stop" digital hub with a unified entry point, standardized protocols, and centralized management [10]. Specifically, this entails: 1) establishing a university-wide public data platform that consolidates multi-dimensional student data (academic progress, behavioral conduct, consumption habits, psychological status, etc.) to form a comprehensive, dynamic digital student profile; 2) developing intelligent analytical algorithms based on educational goals and practical needs, enabling precise prediction of individual growth requirements and macro-analysis of group trends to provide data-driven evidence for management decisions; and 3) enhancing platform interaction features by instituting a closed-loop process of "student request → system response → department handling → outcome feedback," ensuring service quality is traceable, evaluable, and improvable.

Second, innovate cross-departmental collaboration mechanisms to dismantle data barriers and administrative divides. The current predicament where data flows smoothly vertically but remains blocked horizontally reflects a misalignment between organizational structures and the demands of digital management. To address this: 1) at the institutional level, universities could explore establishing a "Digital Education Collaboration Office" or designating a specialized unit to oversee data governance, clarifying its authority and responsibilities in setting data standards, monitoring sharing procedures, and ensuring security compliance; 2) develop business-driven data sharing catalogs and exchange protocols, using specific educational scenarios (e.g., academic early warning, psychological support, career guidance) as the basis for connecting data pathways between departments like student affairs, academic administration, psychological counseling centers, and career services; and 3) incorporate the effectiveness of data sharing and collaborative efficiency into the performance evaluation of relevant departments, using institutional incentives to foster cross-unit cooperation and create a virtuous cycle where data flow drives business processes, and business processes optimize management workflows.

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(3) Innovating Services: Establishing a New Paradigm of Smart, Precisely-Tailored Educationnnovating the decorative mode of traditional embroidery

The service model within university "one-stop" student communities is a crucial link in advancing digital empowerment. To address prevalent issues such as service homogenization, undifferentiated provision, and delayed responses, it is essential to establish a new paradigm for smart education. This paradigm should be founded on precise identification, enabled by intelligent matching, and sustained through iterative optimization. It aims to catalyze a qualitative shift in student services from uniform provision to precise adaptation.

First, construct a targeted needs identification system based on multi-dimensional sensing. The efficacy of smart services relies fundamentally on accurate insights into student needs. This involves: 1) establishing a panoramic student profile system that integrates multi-source data—including academic performance, behavioral patterns, psychological well-being, and developmental aspirations—to create a dynamically updated digital twin of student growth; 2) utilizing machine learning algorithms to identify the needs characteristics of both individuals and groups, enabling the deep analysis of both explicit and latent requirements; and 3) developing a needs classification and prioritization model to formulate differentiated response strategies and resource allocation plans based on the urgency, scope, and complexity of various needs.

Second, develop intelligent, personalized service delivery mechanisms [11]. In response to the diverse needs of student development, a precise service-matching system must be created. This entails: 1) building an intelligent 'needs-resources' correlation model that uses algorithmic analysis to achieve accurate alignment between available support resources and specific student needs; 2) developing a personalized service recommendation engine that intelligently suggests suitable development plans, learning materials, and practical activities based on individual characteristics such as a student's developmental stage, areas for improvement, and personal interests; and 3) establishing a service portfolio optimization mechanism capable of providing integrated "one-stop" solutions for complex developmental needs, thereby ensuring the coordinated provision and systematic integration of multiple service types.

5. Conclusion

The digital empowerment of university "one-stop" student communities represents a forward-looking and systematic educational initiative within the broader process of digital transformation in higher education. Through a systematic analysis of its value, practical challenges, and implementation pathways, this paper reveals that digitalization is not merely a superficial addition of technology, but rather a profound transformation involving the reshaping of concepts, the optimization of structures, and the innovation of services. Currently, digital technology has demonstrated significant potential in enhancing managerial efficiency, enabling targeted ideological and political education, and optimizing resource allocation. However, structural tensions—such as lagging shifts in mindset, misalignment in technological integration, and insufficient adaptability of tools—remain pronounced, constraining the full translation of digital potential into tangible educational outcomes.

Looking ahead, the digital empowerment of student communities will evolve toward a deeper form of intelligent educational integration. On one hand, with the ongoing advancement of technologies such as artificial intelligence, big data, and the metaverse, student communities will place greater emphasis on constructing blended physical-digital scenarios, data-informed decision support, and human-computer collaborative governance models. On the other hand, the success of digital transformation will ultimately depend on upholding the fundamental mission of education—balancing instrumental rationality with value rationality in technology application, infusing efficiency gains with humanistic care, and respecting the principles of

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student development within data-driven processes. Future research could further explore issues such as digital ethics, long-term evaluation mechanisms, and cross-institutional collaborative ecosystems, thereby propelling the "one-stop" student community from merely achieving digital coverage toward realizing intelligent empowerment, and truly establishing it as a high ground for cultivating a new generation capable of meeting the demands of the times [12].

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