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A STUDY ON ENHANCING MANAGEMENT QUALITY OF DIVERSE STUDENT ACTIVITY IN HIGHER EDUCATION INSTITUTIONS IN THE DIGITAL AGE

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In the digital era, the management of student activities in higher education institutions faces structural dilemmas characterized by "prioritizing control over development" and "having platforms without ecosystems", necessitating a shift from transaction-based operations to value creation. Grounded in the theories of holistic education and digital governance, this study constructs a three-dimensional analytical framework of "data-scene-education" to systematically reveal the core contradictions in current management practices, including mismatches between supply and demand, disconnections between participation and experience, misalignments between evaluation and objectives, and separations between tools and humanity. The study proposes platform integration, scene-driven approaches, data profiling, and the return of the student as the subject as core pathways to facilitate the transition from fragmented management to ecological governance. It further puts forward a support system centered on organizational and institutional safeguards and the prevention of technological risks. This research provides a systematic theoretical perspective and practical pathways for improving the quality of student activity management in higher education institutions.

The article further substantiates strategies for enhancing the management of diverse student activities under conditions of digital transformation by integrating learner-centered education with digital governance. It demonstrates that the identified contradictions are systemic and reproduced through fragmented digitalization, requiring not only technological modernization but a reconstruction of managerial logic oriented toward data integration, goal alignment, experiential quality, and strengthened student agency. Strategic directions are proposed, including ecosystem-based resource integration, process-oriented digital assessment, the formation of a "digital portrait" of the student, and expanded co-participation in activity design, alongside organizational safeguards and mechanisms to prevent technocentrism and digital formalism.

Key words: student activity management; digital governance; ecological governance; holistic education.

ДОСЛІДЖЕННЯ ПІДВИЩЕННЯ ЯКОСТІ УПРАВЛІННЯ РІЗНОМАНІТНОЮ ДІЯЛЬНІСТЮ СТУДЕНТІВ ЗАКЛАДІВ ВИЩОЇ ОСВІТИ У ЦИФРОВУ ЕПОХУ

Гао Тянь

У цифрову епоху управління діяльністю студентів у закладах вищої освіти стикається зі структурними дилемами, які характеризуються "пріоритетом контролю над розвитком", а також "наявністю платформ без екосистем". Це потребує переорієнтації від суто транзакційного підходу до гуманістичних цінностей освіти. Грунтуючись на теоріях цілісної

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освіти та цифрового управління у рамках даного дослідження побудовано тривимірну аналітичну структуру "інформація – педагогічна ситуація у сукупності її конкретних умов – освіта", щоб систематично виявляли основні протиріччя в сучасних методах управління, включаючи невідповідність між попитом і пропозицією, розрив між необхідністю участі у певних видах діяльності та наявним рівнем досвіду, несумісність між оцінкою та людським фактором. У дослідженні представлено основні шляхи для полегшення переходу від фрагментованого до екологічного управління, а саме: методи інтеграції різних цифрових платформ, засновані на аналізі реальних педагогічних ситуацій підходи, особливості розробки профілю даних та відновлення статусу студента як повноправного суб'єкта освітнього процесу. Крім цього, пропонується система підтримки, зорієнтована на забезпечення організаційних та інституційних гарантій та уникнення появи технологічних ризиків.

У статті також обґрунтовуються стратегії підвищення ефективності управління різноманітною студентською діяльністю в умовах цифрової трансформації шляхом гармонійного поєднання освіти, центрованої на здобувачі освіти, із цифровим управлінням. Показано, що виявлені протиріччя мають системний характер і відтворюються в результаті фрагментованої цифровізації, вимагаючи не тільки технологічної модернізації, а й перебудови управлінської логіки, орієнтованої на інтеграцію даних, узгодження педагогічних цілей, забезпечення високої якості досвіду та підвищення рівня самостійності студентів. Запропоновано стратегічні напрями вдосконалення управління різними видами діяльності студентів. Серед них можна назвати об'єднання різних видів ресурсів з метою створення гармонійної екосистеми закладу освіти, орієнтовану на процес цифрову оцінку, формування "цифрового портрета" студента, залучення здобувачів освіти до участі у різних видах діяльності та їх розробки, впровадження дієвих механізмів запобігання техноцентризму та цифровому формалізму. Таким чином, у дослідженні запропоновано систематичну теоретичну перспективу та практичні шляхи підвищення якості управління студентською діяльністю у закладах вищої освіти.

Ключові слова: управління студентською діяльністю; цифрове керування; екологічне керування; цілісна освіта.

Introduction of the issue. Against the backdrop of the deepening advancement of the digital transformation in education, promoting the modernization of governance systems and capabilities in higher education institutions has become a central issue in the reform and development of higher education. The deep application of digital technologies and the release of the value of data elements have not only transformed the technical means of the educational process but have also profoundly reshaped the logic of organizing student activities. Traditional student activity management models centered on administrative control and formal reporting are no longer able to meet the flexible, adaptive, and personalized requirements for student development in the digital age. Currently, the contradiction between the individualization and diversification of student development needs and the standardization and rigidity of activity management models is becoming increasingly prominent, manifesting as a management dilemma characterized by "prioritizing control over development"

and "having platforms without ecosystems". On the one hand, excessive emphasis on administrative control and formal reporting obscures the core goal of student growth; on the other hand, various digital services and information systems are launched in a fragmented manner, failing to form a holistic digital environment that supports flexible educational scenarios and ensures unified educational objectives.

Given this, the core focus of this study is on how to leverage digital technology empowerment to address the practical dilemmas of student activity management and promote its leap from "transaction processing" to "value creation". University digital environments contain vast amounts of information regarding student participation, performance outcomes, interest preferences, etc. However, due to the lack of corresponding analytical frameworks, data cannot be effectively transformed into management decisions that promote student growth. To this end, there is an urgent need to construct an analytical model that deeply integrates "data-scene-education" to achieve the rational utilization of digital resources in

the design of integrated in-class and extracurricular educational environments. This model requires not only the integration of platform technologies but also a methodological reconstruction of management goals and functions, focusing on individual growth support and the cultivation of generic competencies, thereby facilitating the transition from fragmented digital management to ecosystem-based governance centered on the quality of student development.

Current state of the issue. Current academic explorations related to this study can be summarized into four interrelated directions, clearly presenting the evolutionary trajectory of academic discourse from theories of "student involvement" and "individual growth" to research on the transformation of university management models driven by digital technology.

First, theoretical research that identifies student involvement and individual growth as the core determinants of educational quality. Astin's theory of student involvement holds foundational significance. This theory views student involvement as a key mechanism for their growth and academic development, arguing that the quality of learning outcomes is directly related to the degree of students' active participation in various campus activities. This theory provides a methodological basis for the shift in university management from administrative control to stimulating student initiative and responsibility [1]. Building on this foundation, scholars such as Claxton, Costa, and Kallick further argue for the importance of soft skills and cognitive flexibility in modern education, emphasizing that education systems need to systematically cultivate students' metacognitive and reflective abilities. This perspective requires management systems to integrate in-class and extracurricular educational activities into a unified development program to respond to the intrinsic needs of students' holistic development [3].

Second, research on the impact of digital technology on student involvement and the organization of educational models. Scholars such as Bergdahl and Fors have explored how educational technology expands the forms of student learning engagement. Their research indicates that the effectiveness of technology application depends not on the tools themselves but rather on the quality of educational practices and the suitability of management capabilities [2]. Prakash regards digital technology as an effective means to enhance interactivity and learning motivation, highlighting the positive role of digital platforms in shaping students' active learning status [7]. Yaseen and his team systematically analyzed the impact of adaptive educational technologies, personalized feedback, and interactive artificial intelligence tools on student involvement, introducing digital literacy as a moderating variable for effectiveness, emphasizing that digital transformation management must also attend to the cultivation of users' capabilities [8]. Overall, existing research has fully demonstrated that digital tools are important resources for improving management quality, but their potential can only be fully realized when systematically integrated into the educational environment.

Third, research on the perspective of digital management in education and the optimization of organizational models. Hryesai focuses on the effectiveness of digital tools in basic education management, and his conclusions can be extended to higher education: digital technology can significantly enhance the transparency of management processes, the efficiency of decision-making, and the scientific nature of management analysis [5]. At the university level, these concepts are reflected in the extensive exploration of digital campus platform projects. For example, Seton Hall University's "Modern Campus" project aims to optimize student interaction and growth paths by constructing a unified digital environment; Pathify's campus experience platform emphasizes digital

community building as an important component of the overall student growth ecosystem [6]. Thus, the development trend in this field is shifting from fragmented service launches to integrated platform solutions covering all types of student activities. The core concern is moving from "platform construction" to "ecosystem building", and the focus is shifting from the improvement of single system functions to cross-departmental data integration and business collaboration.

Fourth, research on the institutional and policy aspects of organizing extracurricular student activities. At the institutional level, the Implementation Guide for the Second Classroom Transcript System in Higher Education Institutions, compiled by the School Department of the Central Committee of the Communist Youth League, provides principled provisions for recording and evaluating students' extracurricular achievements, which plays an important guiding role in the institutionalization of related practices [13]. At the practical level, Chinese universities have developed a number of representative models: Jiamusi University constructed a "four-dimensional drive" model to integrate educational resources within and outside the university and systematically advance the construction of the second classroom system, demonstrating the innovative application value of digital management platforms for the "second classroom" [9]; Shanghai University built a "one-stop" student community, leveraging digital intelligence to achieve precise education [10]; Yunnan University of Finance and Economics constructed an "educational smart brain", establishing an intelligent system for analyzing student activity data and forming a "student holographic profile" covering the entire university, achieving a transformation from "single-point application" to "comprehensive digital empowerment," representing a self-developed digital intelligence education system practice [11], while simultaneously implementing a "three-type, three-mode" model to support talent cultivation innovation [12]. These

practices indicate that the educational digital ecosystem for student activities is gradually taking shape and being refined in various universities.

In summary, current relevant academic research is developing along multiple dimensions, including student involvement theory, generic competency cultivation, digital participation mechanisms, and campus digital environment construction. However, there remains a significant methodological gap in existing research: on the one hand, there is a lack of effective articulation between theoretical models of student growth and practical management tools; on the other hand, there is still a notable disconnect between individual digital solutions and the systematic construction of an overall digital space. This provides a clear problem orientation and theoretical space for this study to explore the holistic improvement paths for the quality of university student activity management from a systems theory perspective.

Aim of research is to substantiate ways to improve the quality of management of various types of student activities in higher education institutions in the digital era, based on the integration of the principles of holistic education and digital management. It is also aimed at identifying and overcoming structural problems in the modern organization of extracurricular activities using platform and ecosystem solutions.

Research methods. The methodological foundation of the study is formed by a combination of general scientific and specialized methods. The research employs theoretical analysis and synthesis to generalize concepts of holistic education and digital management, as well as comparative analysis to identify differences between the traditional administrative model and the alternative (digital-ecosystem) model of management.

Results and discussion.

1. Theoretical Basis and Realistic Examination.

1.1. Theoretical Basis.

Holistic education theory provides the value orientation for university student activity management. This theory emphasizes the comprehensive development of human beings, taking the multi-dimensional development of cognition, emotion, sociality, and personality as the ultimate goal of education, and holds that student activities are not merely an auxiliary part of classroom teaching but represent an independent, value-oriented educational space. Astin's theory of student involvement confirms that the degree of students' intellectual and emotional engagement in activities directly determines their actual level of cognitive and personality development [1]. Scholars such as Claxton, Costa, and Kallick further emphasize that extracurricular educational activities are key fields for cultivating students' thinking resilience, reflective ability, sense of responsibility, and collaborative skills, requiring systematic educational support and institutional guarantees [3]. The above theories collectively reveal that the essential goal of student activity management should not be limited to the organization and statistics of activities but should serve the growth and development of students as complete human beings.

Digital governance theory provides methodological support for university student activity management. This theory originates from the field of public management and emphasizes the optimization of management processes, integration of management resources, and improvement of management efficiency through digital technology. Applying this to university student activity management means using digital technology as support to build integrated management platforms, integrate multi-source data resources, and promote the transformation of student activity management from traditional administrative control to precise and intelligent governance. Hrysai's research shows that digital tools can effectively optimize management processes, accelerate decision-making responses,

and strengthen management analysis functions [5]. Prakash emphasizes the positive role of digital platforms in shaping students' active learning status [7], while Yaseen et al. further point out that digital transformation management must also consider the cultivation of users' digital literacy; otherwise, the effectiveness of technological tools will be greatly diminished [8].

Based on the above two theoretical traditions, this study constructs a three-dimensional analytical framework of "data-scene-education". This framework uses holistic education theory to anchor educational goals, clarifying that the value destination of student activities lies in promoting students' holistic development; it uses digital governance theory to provide methodological support, emphasizing that digital technology should serve the realization of educational goals. On this basis, "data" and "scene" serve as intermediate variables connecting theory and practice—data is the resource foundation for understanding student needs, and scenes are the spatial carriers for the realization of educational goals. The three support each other and are indispensable, together constituting the theoretical lens for analyzing the quality issues of student activity management, and also providing a logical basis for the subsequent proposal of systematic reconstruction paths.

1.2. Realistic Examination.

Current practices in university student activity management show a value orientation shift from "transaction management" to "precise education". Data is transforming from a mere control tool into a resource foundation for understanding student needs and providing personalized support. Research by scholars such as Bergdahl and Fors confirms that educational technology can only truly enhance student involvement when integrated into meaningful educational contexts [2]. Yaseen's team's research further indicates that adaptive technologies and personalized feedback can effectively enhance involvement, with digital literacy being a key moderating

variable [8]. These findings collectively point to the conclusion that data and digital services are not ends in themselves but important means for understanding student needs and providing personalized support. Concurrently, the focus of management is shifting from "managing activities" to "cultivating new talents", with the core educational value of student activities becoming increasingly prominent.

At the level of system architecture, student activity management is moving from "platform construction" to "ecosystem building". The focus has shifted from the improvement of single system functions to cross-departmental data integration and business collaboration. Comprehensive solutions such as Seton Hall University's "Modern Campus" project and Pathify's campus experience platform reflect a clear orientation toward service integration, digital community building, and strengthened collaboration among university departments [4; 6]. Under the ecosystem concept, various platforms are integrated into a unified infrastructure, enabling data connectivity and coordinated departmental actions. The core of this transformation lies in breaking down departmental barriers and constructing an integrated, comprehensive digital ecosystem for student activity management, achieving resource sharing and efficient coordination.

At the level of driving mechanisms, practical explorations increasingly emphasize the shift from "teacher-led" to "student-centered". Students are granted the right to participate in activity design, implementation, and evaluation. The intervention of digital tools creates technical conditions for students to participate in the entire activity process, helping to form an educational culture of teacher-student co-governance. Yunnan University of Finance and Economics' "Educational Smart Brain" project constructs "student holographic profiles", integrating full-cycle data of students' participation in various activities, achieving a transformation from "single-

point application" to "comprehensive digital empowerment" [11]. Jiamusi University's "four-dimensional drive" model integrates educational resources from within and outside the university, promoting the systematic construction of the second classroom [12], reflecting the effective implementation of student-centeredness in the digital environment.

In summary, current university student activity management is in a profound process of transformation. The goal of "holistic human development" advocated by holistic education theory is gradually being realized through the "platform-based and data-driven" means of digital governance theory. However, there remains a noticeable tension between theory and practice: the deep integration of "data-scene-education" envisioned by theory is often simplified in practice into a technical route of "data collection-platform display"; the "process-oriented growth" emphasized by holistic education is easily quantified in practice into an indicator assessment of "participation frequency-point accumulation" [13]. This tension precisely reveals the deep-seated contradictions in current student activity management and provides a problem orientation for the subsequent proposal of systematic reconstruction paths.

2. Path Reconstruction: From Fragmented Management to Ecological Governance.

The preceding theoretical analysis and realistic examination indicate that the core predicament facing current university student activity management is not a single technological defect or management oversight, but a systemic imbalance rooted in the management model itself. The misalignment between supply and demand, the disconnection between participation and experience, the deviation between evaluation and goals, and the fragmentation between tools and humanity—these four types of contradictions intertwine and reinforce each other, constituting structural obstacles constraining the improvement of educational quality. Addressing these dilemmas requires moving beyond

piecemeal remedial improvements toward holistic model reconstruction. From the perspective of ecological governance, this chapter proposes four targeted paths for improving the quality of student activity management, each responding to the aforementioned four imbalances, promoting the transformation of student activity management from "fragmented management" to "ecological governance".

2.1. Platform Integration and Process Reengineering: Addressing the Misalignment Between Supply and Demand.

The misalignment between supply and demand stems from the "isolation" of activity resources caused by the fragmentation of multiple departments. The lack of effective data sharing and business collaboration leads to the coexistence of redundant construction and uneven distribution of activity resources. The inevitable result is "what is supplied is not what is needed, and what is needed is not what is supplied", making it difficult to effectively meet students' integrated development needs across disciplines and fields. Hrysai's research has long warned that digital tools can only play a role in enhancing management transparency under the premise of systematic process integration; otherwise, digitization will only replicate and solidify the existing fragmented pattern [5].

The core path to addressing this dilemma lies in platform integration and process reengineering. Specifically, it is necessary to break down departmental barriers within the university, integrate various information resources such as teaching management, student services, and logistical support into a unified platform architecture, and build a "one-stop" student activity resource hub. This platform is not a simple aggregation of functions but an organic integration built on unified data standards and sharing mechanisms. By establishing unified data standards and sharing mechanisms, centralized management and precise recommendation of activity information and resources can be achieved. Activity resources are no longer locked within departmental boundaries but become

public goods accessible to all students on demand. Simultaneously, platform integration must be advanced in tandem with process reengineering, establishing a student-needs-driven resource allocation mechanism, changing the past model of activity supply dominated by departmental intentions. By establishing a student demand research mechanism and leveraging big data analytics, we can accurately identify students' developmental needs and interests, thereby achieving intelligent matching of activity resources [4; 6].

2.2. Scene-Driven and Deep Learning Support: Addressing the Disconnection Between Participation and Experience.

The disconnection between participation and experience manifests in student activities remaining at the formalistic level of "sign-in and check-in", lacking deep interaction and emotional resonance. A large number of extracurricular educational activities are simplified into procedural operations of signing in and accumulating points, with deep participation replaced by superficial "presence". The lack of targeted activity design and deep interaction links makes it difficult to trigger students' emotional resonance and willingness to actively participate, with students often participating in activities to "complete tasks" rather than "achieve growth". Astin's theory of student involvement has long revealed that student growth does not depend on the quantity of activities but on the degree of intellectual and emotional engagement in them [1]. Bergdahl and Fors also emphasize that digital technology itself does not necessarily enhance participation. Instead technological applications lacking educational design can reinforce passive acceptance by students [2].

The core path to addressing this dilemma lies in scene-driven and deep learning support. The core concept is to design the activity scene itself as an educational resource, using digital technology to reshape activity scenes and guide students to "learn by doing and gain insights through learning", transforming passive participation into active

construction. Specific strategies include: using gamification thinking to design challenging and exploratory task chains, stimulating students' intrinsic motivation and desire for exploration; using immersive technologies such as virtual reality (VR) to create embodied activity experiences, enhancing students' sense of presence and emotional engagement; increasing the design of deep interaction, team collaboration, and practical inquiry links, making the activity process itself a carrier for knowledge construction and capability development. Prakash's research confirms that digital tools can only truly enhance students' learning interest and motivation when integrated into interactive, collaborative teaching methods [7]. The role of technology lies in expanding the boundaries of possible scenes and enhancing the interactive attributes of scenes, but the educational value of a scene ultimately depends on whether the learning tasks embedded in it are challenging, whether the interaction process is deep, and whether the experience design can trigger reflection.

2.3. Data Profiling and Process-Oriented Evaluation: Addressing the Deviation Between Evaluation and Goals.

The deviation between evaluation and goals manifests in student activity evaluation lead to the trap of "quantity obsession" and "result orientation". Evaluation focuses on quantitative indicators such as the number of activity participations and accumulated points, neglecting students' specific performance, deep reflection, and actual growth in the activity process. The lack of growth-oriented and value-added evaluations for the enhancement of students' comprehensive competencies not only makes it difficult to fully reflect the true effectiveness of activities in education but also fails to provide effective guidance for students' personalized growth. Scholars such as Claxton emphasize that the cultivation of deep thinking and metacognitive abilities cannot be measured by quantitative indicators alone [3], while the second classroom transcript system, under administrative pressure, tends a simple accumulation of

activity rather than a dynamic analysis of competency development [13].

The core path to addressing this dilemma lies in data profiling and process-oriented evaluation. This path is built on the technical foundation of "student holographic profiles", which integrate full-cycle data of students' participation in various activities to establish digital archives covering the entire process of "participation-performance-reflection-growth".

Compared with traditional activity statistics models, the core advantage of student holographic profiles lies in their multi-dimensional, dynamic, and relational data architecture: it not only records "what activities were participated in" but also focuses on "how they performed in the activities", "what they reflected on after the activities", and "what growth they achieved over time". It is this full-cycle data tracking that provides a solid information foundation for process-oriented evaluation. In terms of evaluation methods, process-oriented evaluation advocates an organic combination of "quantitative + qualitative". Quantitative indicators can be used to grasp the basic situation of student participation, but what truly reflects the effectiveness of education is often the growth trajectories and competency changes revealed by qualitative information. Therefore, process-oriented evaluation emphasizes the systematic collection and analysis of qualitative materials such as students' reflection logs, works, and peer evaluations, placing growth-oriented and value-added evaluations at the core of the evaluation system.

2.4 Return of the Subject and Collaborative Education: Addressing the Fragmentation Between Tools and Humanity

The fragmentation between tools and humanity manifests in technological application fell into the rut of "function stacking", emphasizing construction over operation, and data collection over privacy protection and humanistic care. Some universities excessively pursue technological upgrades and functional

improvements in management platforms, simplistically treating digital technology as a "control tool", while neglecting students' subject status and emotional needs. The lack of data usage specifications and algorithmic bias prevention mechanisms can easily give rise to "digital formalism" – management decisions based on aggregated indicators while ignoring individual circumstances; technological evaluation replacing educational reflection, with student subjectivity yielding to algorithmic judgment. Although comprehensive campus solutions demonstrate an intention to build an integrated digital ecosystem [4; 6], they also bring practical issues concerning how to balance analytical capabilities with user rights.

The core path to addressing this dilemma lies in the return of the subject and collaborative education. This path contains two mutually supporting dimensions: first, returning to the subject status of students, granting them the right to participate in activity governance; second, strengthening the ethical norms of technological application, constructing a warm digital educational environment. Regarding the return of student subjectivity, the key is to transform students from passive management objects into active governance subjects. Specific pathways include establishing teacher-student co-creation and student-led activity incubation mechanisms, expanding students' participation rights in activity management decisions, and establishing students' rights to access, verify, and dispute digital archives. Regarding technological ethics norms, the core is to establish the basic principle of "technology serving people". Specific measures include improving data privacy protection systems, strictly defining the scope of data collection and usage, establishing algorithmic review and bias prevention mechanisms, guarding against "digital formalism", and adhering to the core orientation of technology serving education. Digital transformation should not become a tool for algorithmic decision-making and strengthened control, but rather an opportunity to

expand students' space for participating in the management of their own activities and to enhance humanistic care in educational relationships.

3. Safeguard Mechanisms, Risk Prevention, and Research Prospects.

The systemic transformation of student activity management from "fragmented management" to "ecological governance" is not merely a technological upgrade or process optimization, but a deep-seated transformation involving multiple dimensions such as organizational structure, institutional norms, and value concepts. Ensuring the smooth implementation of this transformation requires the construction of matching safeguard mechanisms, while also establishing effective prevention mechanisms against potential risks that may emerge during the transformation process.

3.1. Organizational and Institutional Safeguards.

The primary characteristic of ecological governance is multi-actor collaboration, which requires breaking through the traditional bureaucratic management structure and establishing a more inclusive and interactive governance structure. The core of organizational safeguards lies in the establishment of a university-college-society (student society) collaborative digital activity management committee, forming an organizational system with overall coordination, clear rights and responsibilities, and linkage between upper and lower levels. Vertically, it is necessary to clarify the division of responsibilities among the university, colleges, and student societies: the university level is responsible for overall planning, formulating top-level design for digital development, unifying data standards, and coordinating cross-departmental resource allocation; the college level is responsible for specific implementation, carrying out activity design and organization in conjunction with disciplinary and professional characteristics; the student society level assumes an active participation role, leveraging its unique advantage of being

close to students and understanding their needs. Horizontally, it is necessary to include teaching management, student affairs, information technology, security, and representatives of student self-governance organizations in a unified coordination body. Cross-departmental regular communication mechanisms help break down the long-standing "data silos" and "business barriers", enabling data resources scattered across various departments to truly flow and serve unified educational goals [11].

Institutions serve as the bridge translating ideas into practice. Digital transformation lacking institutional support often struggles to form sustained momentum for change. For the ecological transformation of student activity management, three types of supporting institutions need to be improved. First, unified data standards and information security management systems. The lack of data standards is a primary obstacle to cross-departmental data integration. Unified specifications for data collection, storage, sharing, and usage need to be established at the university level to ensure data authenticity, integrity, and interoperability. Simultaneously, a security management system covering the entire data lifecycle should be established, clarifying the principle of minimum necessity for data collection, hierarchical access control mechanisms, and compliance review processes for data use. Special attention should be paid to the anonymization of students' personal information to prevent short-sighted behaviors that sacrifice student privacy for management convenience [11]. Second, a sound second classroom credit recognition system. Based on the Implementation Guide for the Second Classroom Transcript System in Higher Education Institutions, further refinement is needed in activity classification standards, competency development indicators, and cross-platform data integration mechanisms. Qualitative materials should be incorporated into the evaluation system, ensuring that the second classroom transcript truly reflects students'

comprehensive competency development rather than simply accumulating activity participation counts [13]. Third, the establishment of activity management assessment systems. The quality of activity management and educational outcomes should be incorporated into the assessment scope of relevant departments and individuals. The design of assessment indicators requires vigilance against the trap of "digital formalism", avoiding the substitution of process indicators such as data collection volume and platform login rates for the ultimate standard of educational effectiveness. Scientific assessment mechanisms should guide departments from "responding to inspections" toward "pursuing educational effectiveness".

Digital literacy cultivation is an important component of safeguard mechanisms and a fundamental solution for preventing various risks. Research by scholars such as Yaseen confirms that digital literacy is a key moderating variable in the effectiveness of digital management-users' digital operational capabilities and information security awareness directly affect the actual effectiveness and potential risks of technological tools [8]. At the teacher level, digital literacy should be integrated into teacher development systems, helping teachers understand the basic logic of digital technology, master basic methods of data analysis, and identify potential risks of algorithmic bias, enabling teachers to use digital tools critically rather than passively accepting output from technical systems. At the student level, digital literacy should be systematically cultivated as an important component of the second classroom, helping students establish correct awareness of data privacy, master basic skills for protecting personal information, develop critical thinking to identify the echo chamber effects that algorithmic recommendations may bring, and strengthen subject awareness to clarify their rights boundaries in digital management.

3.2. Risk Prevention: Vigilance Against and Prevention of Technological Alienation.

The process of ecological transformation is also a process of risk reproduction. The deep embedding of technology, while enhancing management efficiency, may give rise to new risks of alienation, requiring the establishment of effective prevention mechanisms. First, preventing the risk of data privacy breaches. The construction of student holographic profiles entails the centralized storage and processing of large amounts of personally sensitive information. It is necessary to strictly implement information security management systems, strengthen data encryption and access control, establish regular security audits and vulnerability 排查 mechanisms, adhere to the principle of "minimum necessity" in data usage, and establish emergency response mechanisms for data breaches. Second, preventing the risk of algorithmic bias. Beneath the appearance of "technological neutrality" of algorithms often hide the value presuppositions of designers and inherent biases in data training sets. Without careful scrutiny, algorithmic bias may be amplified through evaluation and recommendation mechanisms, leading to implicit discrimination against specific student groups. It is necessary to establish ethical review mechanisms for algorithm design, regular monitoring mechanisms, and transparent explanation mechanisms to ensure that algorithmic decision-making logic is understandable and traceable [11].

Third, preventing the risk of "digital formalism". Digital formalism is a typical manifestation of technocentrism, which is characterized by substituting technology for goals and using form to obscure substance. To be specific, digital formalism means using platform login rates to replace activity participation, data collection volume to replace educational effectiveness, and algorithmic evaluation to replace educational reflection. The core of preventing digital formalism lies in adhering to the

fundamental principle of "technology serving education", avoiding treating digitization itself as an end goal. In institutional design, it is necessary to establish the principle of prioritizing process evaluation and combining quantitative and qualitative approaches, recognizing the basic fact that digital indicators cannot fully reflect complex personality changes. In practical operation, it is necessary to establish teacher-student feedback mechanisms, allowing students to raise objections to automated evaluation results and participate in the verification and adjustment of digital archives.

Conclusions and research perspectives. This study, grounded in the integration of holistic education and digital governance theories, constructs a three-dimensional analytical framework of "data-scene-education", systematically reveals four types of structural contradictions in current university student activity management, and proposes systematic transformation paths from "fragmented management" to "ecological governance". Future research can be advanced in the following directions: first, deepening empirical research by selecting representative universities for longitudinal tracking studies to examine the actual effectiveness of ecological governance paths; second, refining the construction methods of «student holographic profiles,» exploring technical pathways for effectively incorporating qualitative information into the profile system; third, exploring the ethical framework of algorithmic governance, embedding values of fairness and justice in algorithm design and establishing transparent explanation mechanisms; fourth, expanding comparative research perspectives, revealing the model differences and common patterns of student activity management across different cultural contexts. The digital transformation of student activity management is a complex systematic project requiring not only technological support but also conceptual renewal; not only institutional guarantees but also

value commitments. This study provides only an analytical framework and action direction for this proposition, with more theoretical and practical issues awaiting further exploration in subsequent research.

REFERENCES

1. Astin, A.W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518-529 [in English].
2. Bergdahl, N., Fors, U., Hernwall, P., & Knutsson, O. (2018). The use of learning technologies and student engagement in learning activities. *Nordic Journal of Digital Literacy*, 13(2), 113-130. DOI: <https://doi.org/10.18261/issn.1891-943x-2018-02-04> [in English].
3. Claxton, G., Costa, A.L., & Kallick, B. (2016). Hard thinking about soft skills. *Educational Leadership*, 73(6), 60-64. Retrieved from: <https://eric.ed.gov/?id=EJ1092939> [in English].
4. *Seton Hall University*. (2025). Continuing Education and Professional Studies launches Modern Campus to enhance student relationships and enrollment experience. Retrieved from: <https://applicant.shu.edu/continuing-education/news/continuing-education-launches-modern-campus-for-students.html> [in English].
5. Hrysay, Y. (2025). Digital tools in the management activities of general secondary education institutions. *ScienceRise: Pedagogical Education*, 2(63), 10-14. DOI: <https://doi.org/10.15587/2519-4984.2025.331116> [in English].
6. *Pathify*. (2025). Pathify expands campus experience platform with standalone communities' solution. Retrieved from: <https://pathify.com/news/pathify-expands-campus-experience-platform-with-standalone-communities-solution-2/> [in English].
7. Prakash, S. (2026). Role of digital technology in enhancing student engagement in classrooms. *Naveen International Journal of Multidisciplinary Sciences*, 2(3), 55-63. DOI: <https://doi.org/10.71126/nijms.v2i3.114> [in English].
8. Yaseen, H., Mohammad, A.S., Ashal, N., Abusaimh, H., Ali, A., & Sharabati, A.-A.A. (2025). The impact of adaptive learning technologies, personalized feedback, and interactive AI tools on student engagement: The moderating role of digital literacy. *Sustainability*, 17(3), Article 1133. DOI: <https://doi.org/10.3390/su17031133> [in English].
9. *Shanghai University*. (2025). "One-Stop" student community: Digital intelligence empowers the community for more precise education. Retrieved from: https://yurenhao1.sizhengwang.cn/a/2025nsqfczshdyxcgzt_szfn/250910/2216681.shtml [in Chinese].
10. *Yunnan University of Finance and Economics*. (2025). Leading talent cultivation innovation with the "Three Types, Three Modes" model: Four educational teaching reform research projects granted provincial-level approval. Retrieved from: <https://www.ynufe.edu.cn/jwcgb/info/1048/4781.htm> [in Chinese].
11. *Finance Sina*. (2026). From "single-point application" to "comprehensive empowerment": Yunnan University of Finance and Economics' self-developed "Educational Smart Brain". Retrieved from: <https://finance.sina.cn/2026-01-28/detail-inhiwhqt7335974.d.html> [in Chinese].
12. *China Education Online*. (2025). Jiamusi University Youth League Committee constructs a "four-dimensional drive" mechanism to create a new high ground for collaborative education in the "second classroom". Retrieved from: https://www.eol.cn/heilongjiang/hljgd/202512/t20251231_2713768.shtml [in Chinese].
13. *School Department of the Central Committee of the Communist Youth League*. (2018). Implementation guide for the second classroom transcript system in higher education institutions. Beijing: China Youth Publishing House [in Chinese].

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