

Bottlenecks and Breakthrough Paths of Digital Transformation in Governance of Private Higher Educational Institutions

Dongting Wei, and Rixin Zhang*

Guangzhou Institute of Science and Technology, Guangzhou, 510540, China.

Corresponding Author. E-mail: 3068200380@qq.com

Received December 3, 2025; **Revised** February 27, 2026; **Accepted** March 28, 2026

Abstract

Against the backdrop of the in-depth advancement of the national education digitalization strategy and the deep penetration of artificial intelligence and big data technologies into the education sector, private higher educational institutions (HEIs) as an important component of the higher education system, need to promote digital transformation of governance under the dual attributes of "educational public welfare" and "market flexibility" to solve traditional governance problems and achieve an upgrade from "experience-based governance" to "digital governance". This paper takes the Guangzhou Institute of Science and Technology (GZIST) as a case study. By defining the core concepts of governance and digital transformation of governance in private HEIs and relying on the theories of collaborative governance, technology-institutional mutual construction, and data-driven decision-making, it first reviews the initial practices of digital governance at the institution, including the construction of a smart campus framework, the introduction of intelligent teaching management systems and Office Automation (OA) systems, and the establishment of a research project management platform. Then, it analyzes the three core bottlenecks commonly faced by the private HEIs, namely, system isolation and mismatch of demands at the technology adaptation level, ambiguous rights and responsibilities, and lagging rules at the institutional guarantee level, and insufficient participation and lack of interdepartmental coordination at the subject collaboration level. Finally, it proposes three targeted breakthrough paths: constructing a "unified middleware + customized development" technology system, improving a "clear rights and responsibilities + rule adaptation" institutional framework, and establishing a "multi-party participation + cross-departmental coordination" collaborative mechanism, with the aim of providing theoretical references and replicable practical solutions for the digital transformation of governance in private HEIs.

Keywords: Digital transformation; Data-driven decision-making; Collaborative governance theory; Higher educational institutions

Introduction

Against the backdrop of the in-depth advancement of the national education digitalization strategy, digital technologies such as artificial intelligence and big data are evolving from "tool application" to "ecosystem reconstruction", offering new opportunities for private HEIs to solve governance challenges and achieve high-quality development. As an important part of the higher education system, private HEIs, with their dual attributes of "educational public welfare" and "market flexibility", face more complex adaptability challenges in the digitalization process than public HEIs (Ajani & Dlomo, 2024). Their digital governance transformation not only requires the completion of technical system construction but also needs to balance the relationship between capital logic and educational laws (Li & Zhang, 2025). This makes it imperative for private HEIs to explore targeted paths in line with specific practices.

Existing international researches have carried out relevant explorations on higher education digital transformation, with English and Thai literatures forming preliminary research results: Ajani and Dlomo (2024) conducted a systematic comparison of the digital governance effects of public and private HEIs, concluding that private HEIs have flexible resource allocation in digital construction but face dilemmas in balancing market benefits and educational public welfare; Mohamed Hashim et al. (2022) proposed a technical-institutional dual-pillar framework for higher education digital governance, yet the research object is limited to European and American public HEIs and does not consider the dual attributes of private HEIs; Yang and Prasansaph (2024) carried out Sino-Thai comparative research on the modernization of private higher education management, pointing out that private HEIs in both China and Southeast Asia have the common problem of "emphasizing technology procurement while neglecting ecosystem construction", but the research only stays at the macro level without in-depth case analysis and targeted solution design. Domestic research on university digital governance (Jin & Dai, 2024; Li & Zhang, 2025) also mainly focuses on public HEIs, with scattered discussions on private HEIs and no systematic analysis of their digital governance transformation from the multi-dimensional perspective of technology, institution and subject collaboration. Based on the combing of the above researches, three key knowledge gaps in the current field are identified: 1) The research object is biased towards public HEIs, and the theoretical construction of "technology-system-ecosystem" coordinated transformation for private HEIs with dual attributes is relatively weak; 2) The research dimension is single, ignoring the multi-dimensional interactive constraints of technical adaptation, institutional guarantee and subject collaboration in the digital transformation of private HEIs; 3) The connection between theory and practice is insufficient, lacking replicable practical solutions based on in-depth case studies of private HEIs.

The research on the digital governance transformation of private HEIs holds both theoretical and practical significance. Theoretically, current academic research on the digitalization of university governance primarily focuses on public HEIs, whereas the theoretical construction of the "technology - system - ecosystem" coordinated transformation in private HEIs is relatively underdeveloped. This study targets the above-mentioned knowledge gaps, takes private HEIs as the core research object, and constructs a three-dimensional coordinated transformation framework integrating technology, institution and subject, which can fill this gap, enrich the theoretical system of digital governance in education, and provide a "private perspective" reference for subsequent related research. Practically, this paper uses the GZIST as a case study to analyze the practical bottlenecks and breakthrough strategies of digital governance in private HEIs. It can not only provide direct guidance for optimizing the governance system of this institution but also offer replicable, practical solutions for other private HEIs, helping them implement the "AI Empowering Education Action" and achieve a leap from "experience-based governance" to "digital governance."

This study focuses on the digital governance transformation of private HEIs, with the GZIST serving as a specific case. For the literature analysis method, we systematically retrieved and screened international and domestic literature on higher education digital governance, private HEI operation management and technology-institutional mutual construction from core academic databases (CNKI, Web of Science, Scopus) by using keywords such as "private higher education", "digital governance transformation" and "collaborative governance", and sorted out the theoretical achievements, research hotspots and existing deficiencies of relevant research to lay a theoretical foundation for this paper. For the case study method, we adopted a mixed data collection approach at GZIST including in-depth semi-structured interviews with 15 managers from the academic affairs, personnel, information network and other functional departments, systematic document analysis of the school's digital construction plans, system operation reports and governance rules, and field observation of the application status of digital management systems in various departments. The collected qualitative and quantitative data were coded and inductively analyzed by using the Nvivo software to identify the key bottlenecks in the digital governance transformation of the school and extract the common characteristics of private HEIs in digital transformation. Based on the above research methods, this study combines the common characteristics of private HEIs to identify bottleneck types. Ultimately, through logical deduction, it proposes corresponding breakthrough paths for various bottlenecks, thereby forming a systematic solution that provides both theoretical and practical support for the digital governance transformation of private HEIs.

Core Concepts and Theoretical Basis

The governance of private HEIs refers to the rule system and operational logic formed by multiple governance subjects, including the board of directors, the president, teachers, students, and administrative departments within the institutions, concerning resource allocation, power and responsibility distribution, decision-making procedures, and evaluation mechanisms (Nandi, 2021). A notable feature is the need to handle the tension between capital investment and the public welfare nature of education (Shyiramunda & van den Bersselaar,

2024). It is essential to ensure the vitality of the school's operations through market mechanisms while upholding its core mission of education and ensuring that governance behaviors comply with the laws governing higher education.

Digital transformation in private HEIs involves the systematic reshaping of the decision-making mechanisms, process systems, power and responsibility structures, and feedback mechanisms of internal governance through digital technologies such as big data, artificial intelligence, and RPA process automation (Mohamed Hashim et al., 2022). The aim is to achieve data integration, process optimization, intelligent decision-making, and efficient collaboration, ultimately building a new governance ecosystem based on data, and intelligence to enhance governance efficiency and educational quality.

The theory of collaborative governance emphasizes that multiple governance subjects achieve governance goals through the sharing of information, coordination of power and responsibility, and interactive cooperation (Ansell & Gash, 2008). The core lies in breaking down barriers among subjects to form a governance synergy. In this paper, this theory is used to guide the solution to the problem of subject collaboration in the digital transformation of private HEIs. The GZIST faces bottlenecks, including insufficient participation from teachers and students, as well as a lack of cross-departmental collaboration in its digital practices. Based on the theory of collaborative governance, it can establish a "Digital Governance Consultative Committee" and form cross-departmental task forces to facilitate the participation of teachers and students and coordinate departmental resources, achieving multi-party collaboration among the board of directors, administration, teaching, and students, providing support at the subject level for digital transformation.

The theory of technology-institutional co-construction holds that the application of technology and institutional building are not unidirectional influences but rather a mutually reinforcing and co-evolving relationship (Navarro & Tudge, 2023). The implementation of technology requires an appropriate institutional environment, and institutional innovation needs to support the release of technological value (Su et al., 2023). A disconnect between the two will result in technology failing to achieve its intended effect. In this study, this theory is used to analyze the bottleneck of "more technology stacking and less institutional adaptation" at GZIST. After introducing systems such as intelligent teaching and OA office, failed to revise the teacher performance evaluation and data security management systems simultaneously, leading to a mismatch between technological tools and governance rules, and failing to achieve the expected governance efficiency. Based on this theory, the subsequent breakthrough requires the simultaneous advancement of technology optimization and institutional innovation, clarifying digital rights and responsibilities and standardizing the application process of technology through institutions, so that technology and institutions can promote each other.

The theory of data-driven decision-making advocates using data as the core basis for decision-making, enhancing the scientificity and accuracy of decisions through data integration, algorithm analysis, and model optimization, replacing the traditional "experience-driven" decision-making model (Buijsse et al., 2023). In this research, this theory is used to guide the digital upgrade of governance decision-making in private HEIs. GZIST still relies on manual experience in decision-making regarding resource allocation and student management,

without fully utilizing governance data. Based on the theory of data-driven decision-making, it can build a school-level data platform and develop AI decision-making models to integrate multi-dimensional data from teaching, human resources, finance, etc., providing data support for decisions such as resource allocation and scholarship evaluation, achieving a transformation from "experience-based" to "precise" decision-making.

Analysis of Bottlenecks in the Digital Transformation of Governance in Private Higher Educational Institutions - The Practice of Guangzhou Institute of Science and Technology

The Guangzhou Institute of Science and Technology, as a representative of private HEIs, has initiated preliminary exploration of digital governance, laying the groundwork for subsequent transformation. However, it is still at the "partial application" stage and has not yet formed a systematic ecosystem. In terms of technology application, the institution has established a basic framework for a smart campus, introduced the Fangzheng educational management system to achieve digitalization of course scheduling and grade management, implemented the OA system to simplify the document circulation process, and built a research project management platform to realize online project application and progress tracking. In terms of resources and policies, digital governance has been incorporated into the institution's development plan. Relying on the research team participating in the national humanities and social science planning project "Research on the High-Quality Development and Collaborative Mechanism Construction of Chinese Private Higher Educational Institutions", the institution provides talent and theoretical support for digital transformation. At the same time, it is equipped with special funds and office equipment to ensure the implementation of technology. As a provincial private undergraduate HEI in the Pearl River Delta region with a medium scale (more than 10,000 students) and mature running experience (established for more than 20 years), GZIST is highly representative in terms of the operational model, resource allocation characteristics and digital construction stage of Chinese private undergraduate HEIs. The bottlenecks identified from its practice are consistent with the problems reflected in the existing literature on private HEI digital governance (Yang & Prasansaph, 2024; Jin & Dai, 2024), which verifies the commonality of these bottlenecks in domestic private HEIs. In terms of transferability, the research findings are highly applicable to medium-sized private undergraduate HEIs in economically developed regions with similar dual attribute constraints and digital construction foundations; for small and micro private vocational HEIs or newly established private HEIs, the specific paths can be adjusted according to their own scale and resource endowments while the core bottleneck logic and solution framework remain applicable. From the perspective of private HEIs as a whole, the practice of GZIST has common characteristics. Most private HEIs have completed the "initial layout" of digital governance, but there is a common problem of "emphasizing technology procurement and neglecting ecosystem construction. Digital applications have mostly remained at the level of efficiency improvement in a single link and have not achieved a systematic reshaping of governance logic and power structures. There is still a gap from the goal of "digital governance". This study believes that the transformation of governance through digitalization in private HEIs is a multidimensional, collaborative process involving technology, systems,

and various entities. According to the practice of the GZIST, the current transformation is facing three core bottlenecks. These bottlenecks are also widespread in other private HEIs and have constrained the release of digital governance efficiency.

1. Technical Adaptation Bottleneck: System Isolation and Demand Displacement Coexist

The existing digital systems of GZIST are distributed in a "fragmented" manner. The systems of education administration, personnel, finance, and student management operate independently, and the data standards are not unified (Jin & Dai, 2024). For example, the fields of teacher information in the personnel system and the teaching system are inconsistent, and student data in the education system and the student affairs system are not updated synchronously, resulting in "data islands" that prevent school-level decision-making from obtaining complete data support. Additionally, when formulating the annual resource allocation plan, data from multiple departments need to be manually integrated, which is both time-consuming and prone to errors (Haas et al., 2021). At the same time, the technical tools and the governance needs of private HEIs are mismatched (Yang & Prasansaph, 2024). The existing systems are primarily general products and have not been customized to reflect the dual attributes of "capital-education" that characterize private HEIs. For example, the intelligent decision-making system can only provide basic data statistics and cannot link capital investment return rate, teaching quality linkage analysis, and other core governance indicators of private HEIs, making it difficult to support complex decision-making needs. The core cause of this bottleneck lies in the fact that the school lacks a top-level design for digital transformation and has not clearly defined data standards and system collaboration goals; the technical procurement process has not fully solicited the opinions of governance entities such as departments and teachers, and is limited by funds and the strength of the technical team, making it difficult to carry out customized development, resulting in a disconnection between tools and scenarios.

2. Institutional Guarantee Bottleneck: Authority and Responsibility Ambiguity and Rules Lagging Together

GZIST has not established a dedicated authority and responsibility system for digital transformation. The responsibilities of the board of directors, administrative departments, and teaching department in digital construction are not clear, resulting in "multiple management" and "responsibility vacuum" - for example, the construction of the digital platform is led by the information network center department, while the colleges lack participation rights, leading to a disconnection between system functions and teaching governance needs; the responsibility for data security has not been implemented to specific departments, and there are loopholes in the protection of teachers' and students' personal information. At the same time, the existing governance rules do not adapt to the needs of digital transformation. For example, the teacher performance evaluation system still focuses on "class hour quantity, number of papers" as core indicators and does not include contributions from teachers in digital governance, such as learning situation analysis and digital teaching plan design, which inhibits teachers' enthusiasm. There is no established rule for dividing responsibility for AI decision-making errors. If an intelligent system makes a deviation in resource allocation, it is challenging to

clarify the responsibility chain among the "technical department, using department - management department." The main reason is that institutions lack a systematic understanding of digital transformation and simply view it as a "technical issue", ignoring the importance of institutional guarantees. Private HEIs often adopt governance systems from public HEIs, but fail to fully incorporate their own capital participation and market-oriented characteristics. Moreover, the process of revising the system is cumbersome, making it difficult to respond quickly to digital demands.

3. Bottleneck of Subject Collaboration: Inadequate Participation and Lack of Linkage

In the digital transformation of GZIST, core governance entities such as teachers and students are mostly in a "passive acceptance" position, with low participation. For example, when the school promoted the "Smart Campus" construction, it did not invite front-line teachers to participate in the design of the functional aspects. After the platform was launched, due to its complex operation and failure to conform to teaching habits, the teacher usage rate was not high. Students' understanding of digital governance was limited to "using the system", lacking channels for feedback and participation in optimization, resulting in the system being unable to precisely match the management needs of students. At the same time, the cross-departmental collaboration mechanism is missing, and each department operates independently in digital construction. For instance, the "Zhengfang Educational Management System" promoted by the Academic Affairs Office and the "Human Resources Management System" by the Human Resources Management Office did not achieve data interoperability, resulting in teachers having to repeatedly fill in teaching data, which increased governance costs. Mainly because the institution did not establish a regular mechanism for entity participation, teachers and students lacked channels to express needs and participate in decision-making; there are "information barriers" and "interest barriers" between departments, lacking a unified digital transformation goal to guide; no cross-departmental collaborative working institution was established, making it difficult to coordinate and solve cross-domain problems during the transformation.

Breakthrough Paths for the Digital Transformation of Governance in Private Higher Educational Institutions

In the context of the continuous deepening of the national education digitalization strategy and the increasingly urgent demand for "digital governance" among private HEIs, based on the previous analysis of the three major bottlenecks commonly encountered by private HEIs - technical adaptation, institutional guarantee, and subject collaboration - it is necessary to start from the "problem-oriented" approach to construct breakthrough paths that precisely match these bottlenecks, promoting the digitalization of governance in private HEIs from "local exploration" to "system implementation", and truly achieving the transformation from "experiential governance" to "digital governance", injecting digital momentum into the high-quality development of private HEIs.

1. Break Through the Technical Adaptation Bottleneck: Build a "Unified Platform + Customized Development" Technical System

In response to the problem of "system isolation and demand mismatch", the institution can prioritize the establishment of a "school-level data platform", formulate unified data encoding, format and interface standards, and promote data integration of existing systems such as educational administration, personnel, finance, and student management, achieving "one-time collection, multi-party reuse" of governance data. For example, integrating the educational administration management system, research management system and human resources management data to achieve real-time linkage and automatically generate preliminary assessment results for teacher performance, thus solving the problem of "data isolation"; at the same time, establish a "demand-oriented" customized development mechanism, with the information network center department jointly forming a demand demonstration group with department heads and teacher representatives, clarifying the characteristic demands of private HEIs such as capital investment analysis and quality improvement linkage, through independent development or joint enterprise customization, to create intelligent tools that are adapted to scenarios, such as developing an "AI resource allocation model", integrating data such as teaching needs of departments, student scale, research output, and capital investment, to provide precise decision support for school-level resource allocation; in addition, strengthen the construction of internal technical teams, through recruitment of data analysts and cooperation with enterprises, to enhance system maintenance and optimization capabilities, ensuring the continuous operation of the technical system.

2. Breakthrough the Institutional Guarantee Bottleneck: Improve the "Clear Rights and Responsibilities + Rule Adaptation" Institutional Framework

In response to the problem of "unclear rights and responsibilities and lagging rules", the institutions can formulate the "Digital Governance Transformation Rights and Responsibilities Division Measures", clearly defining the responsibilities of the board of directors for strategic decision-making and resource guarantee, such as approving special funds and determining transformation goals; the president's office meeting to coordinate transformation projects, such as coordinating cross-departmental resources and supervising project progress; the information network center department responsible for technology implementation and system maintenance; department heads, teachers, and student representatives participating in demand design and application feedback, forming a "diverse collaboration, equal rights and responsibilities" responsibility chain; simultaneously revise existing governance rules, incorporating digital transformation requirements into the system framework, for example, adding the "Digital Governance Participation Degree" indicator, such as contributions to the design of digital teaching plans and the analysis of student learning data, to stimulate the enthusiasm of teachers; formulate the "AI Decision Responsibility Division Details", clearly defining the "AI-assisted decision - manual review - responsibility traceability" process, for example, in scholarship evaluation, after AI generates the preliminary list, it needs to be reviewed by the review group of the department, if there is an error, the responsibility is divided according to "algorithm design responsibility (from the information network center department's technical support) - data provision responsibility (from the

secondary teaching unit's student data) - review responsibility (data verification by the institution's functional departments)", to determine the responsible entity; at the same time, simplify the process of institutional revision, establish a "Digital Transformation Special Revision Channel", to improve the response speed of the system to digital requirements.

3. Breakthrough the Subject Collaboration Bottleneck: Build a "Diverse Participation + Cross-Departmental Linkage" Collaborative Mechanism

In response to the problem of "insufficient participation and lack of linkage", the institution can establish a "Digital Governance Consultation Committee", inviting representatives of different disciplines of teachers, representatives of different grades of students, and administrative personnel from various departments to participate, holding regular meetings to discuss digital transformation plans and review system functions, for example, in the optimization of the "Smart Campus Platform", based on teacher feedback, simplify operation processes and add visualization modules for teaching data, to improve the usage rate of teachers. Establish a "Digital Governance Opinion Platform" that allows teachers and students to provide real-time feedback on system usage issues and offer optimization suggestions, thereby forming a closed-loop mechanism of "demand - feedback - optimization". At the same time, establish a "Digital Transformation Special Working Group", led by the principal, with members including the Information Network Center, the Personnel Department, the Academic Affairs Department, the Research Affairs Department, the Finance Department, the Student Affairs Department, and department heads of various colleges and departments. Monthly collaborative meetings are held to synchronize progress on the transformation and resolve cross-departmental issues. Implement the "Cross-Department Project Responsibility System", for example, in the construction of the "Student Management Platform", the Student Affairs Department is designated as the leading department, while the Academic Affairs Department and the Finance Department provide data and requirements to ensure that the system functions cover multiple aspects such as student course selection, scholarship and aid application, and payment management, breaking down departmental barriers.

Conclusion and Outlook

The key finding of this study is that the successful digital governance transformation of private HEIs with the dual attributes of "educational public welfare" and "market flexibility" cannot rely on a single technical upgrade or institutional adjustment, but must adopt a holistic and synchronized development approach that integrates technology application, institutional innovation and subject collaboration, and all reform measures need to be tailored to the unique hybrid nature of private HEIs that balance capital logic and educational laws.

The digital transformation of governance in private HEIs is a complex system project involving multi-dimensional collaboration of technology application, institutional innovation, and entity coordination. The core bottleneck lies in the insufficient adaptation of the technical system to governance needs, the lack of synchronization between institutional rules and digital transformation, and the insufficient participation of multiple entities and cross-departmental collaboration. An analysis based on GZIST as a case indicates that by constructing a "unified

platform + customized development" technical system, a "clear rights and responsibilities + rule adaptation" institutional framework, and a "diverse participation + cross-departmental collaboration" collaborative mechanism, these bottlenecks can be effectively resolved, and a high-quality digital transformation of governance can be achieved. This conclusion also confirms that the digital transformation of governance in private HEIs requires a focus on the "capital-education" dual attributes, balancing technical efficiency and educational public welfare, in order to build a sustainable digital and intelligent governance ecosystem.

The future digital transformation of governance in private HEIs can deepen in two directions: On the one hand, with the development of "artificial intelligence education big models", it is possible to explore the application of such models in the governance of private HEIs, such as developing a "governance intelligent consultation assistant", providing real-time policy interpretation and process guidance for teachers and students, further improving governance efficiency; On the other hand, it is necessary to continuously pay attention to new challenges brought by technological iterations, such as data security risks of large models and new forms of algorithm bias, and through dynamic optimization of systems and compliance mechanisms, ensure that the digital transformation always proceeds along the "safe, fair, and efficient" direction. At the same time, subsequent research can expand the case scope, compare the digital transformation practices of private HEIs in different regions and at different educational levels, and extract a more universal "private model" to provide more comprehensive support for the modernization of governance in private HEIs in China.

Funding support: This work is funded by the planning project of the The China Association for Non-Government Education (2025): AI Empowerment - Reconstructing the New Ecological System of Internal Governance in Private Higher Educational Institutions (CANQN250007); and the Humanities and Social Sciences Planning Fund Project of the China Ministry of Education: Research on the High-Quality Development and Collaborative Mechanism Construction of Chinese Private Higher Educational Institutions (23YJA880077).

References

- Ajani, O. A., & Dlomo, S. (2024). Comparative analysis of digital transformation's impact on higher education institutions: A systematic literature analysis of public versus private sector. *Journal of Research in Higher Education*, 8(1), 72-96.
<https://doi.org/10.24193/JRHE.2024.1.4>
- Ansell, C., & Gash, A. (2008). Collaborative governance in theory. *Journal of Public Administration Research and Theory*, 18(4), 543-571.
<https://doi.org/10.1093/jopart/mum032>
- Buijsse, R., Willemsen, M., & Snijders, C. (2023). Data-driven decision-making. In W. Liebrechts, W.-J. van den Heuvel, & A. van den Born (Eds.), *Data science for entrepreneurship: Principles and methods for data engineering, analytics, entrepreneurship, and the society* (pp. 239-277). Springer International Publishing.
https://doi.org/10.1007/978-3-031-19554-9_11

- Haas, O., Hutzler, M., Egginger, T. H., Maier, A., & Rothgang, E. (2021). Automating time-consuming and error-prone manual nursing management documentation processes. *CIN: Computers, Informatics, Nursing*, 39(10), 584-591. <https://doi.org/10.1097/cin.0000000000000790>
- Jin, X., & Dai, Y. (2024). Data-driven technology, organizational structure, and interdepartmental data sharing: the case of government-led digital projects in Guangzhou. *Chinese Political Science Review*, 10, 1-18. <https://doi.org/10.1007/s41111-024-00257-z>
- Li, Z., & Zhang, W. (2025). Technology in education: Addressing legal and governance challenges in the digital era. *Education and Information Technologies*, 30(7), 8413-8443. <https://doi.org/10.1007/s10639-024-13036-9>
- Mohamed Hashim, M. A., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Education and Information Technologies*, 27(3), 3171-3195. <https://doi.org/10.1007/s10639-021-10739-1>
- Nandi, E. (2021). Governance, performance and quality in higher education: Evidences from a case study. *Contemporary Education Dialogue*, 19(1), 37-58. <https://doi.org/10.1177/09731849211056380>
- Navarro, J. L., & Tudge, J. R. H. (2023). Technologizing bronfenbrenner: Neo-ecological theory. *Current Psychology*, 42(22), 19338-19354. <https://doi.org/10.1007/s12144-022-02738-3>
- Shyiramunda, T., & van den Bersselaar, D. (2024). Local community development and higher education institutions: Moving from the triple helix to the quadruple helix model. *International Review of Education*, 70(1), 51-85. <https://doi.org/10.1007/s11159-023-10037-7>
- Su, X., Mou, C., & Zhou, S. (2023). Institutional environment, technological innovation capability and service-oriented transformation. *PloS ONE*, 18(2), e0281403. <https://doi.org/10.1371/journal.pone.0281403>
- Yang, X., & Prasansaph, W. (2024). Research on the modernization of private higher education management systems in China. *Library of Progress-Library Science, Information Technology & Computer*, 44(3), 18561-18575. <https://bpasjournals.com/library-science/index.php/journal/article/view/849>