

Algorithmic Governance and Educational Inequality in Chinese Higher Education

¹Teme Hamadi, ¹Rushuang Yu

Affiliations:

Zhejiang Normal University, Jinhua, China

*Correspondence: amaditeme@gmail.com

ABSTRACT

Artificial intelligence, learning analytics, predictive systems, and automated decision tools are increasingly embedded in higher-education governance, yet their implications for educational equity remain contested. This systematic review synthesizes evidence on algorithmic governance in Chinese higher education. Following PRISMA 2020, six search sources were examined between April and May 2026; 49 of 1,286 identified records met the eligibility and quality criteria for qualitative thematic synthesis. Thirty-four studies (69.4%) reported optimization benefits in administration, academic monitoring, resource allocation, or decision support, whereas 31 (63.3%) identified risks of reproducing or intensifying inequality. The principal mediating conditions were socioeconomic status, digital infrastructure, regional disparities, and institutional governance. Evidence was concentrated in eastern and coastal universities, limiting representativeness for central and western China. The review conceptualizes algorithmic governance as a socio-technical regime whose educational value depends on transparent decision rules, human oversight, bias auditing, equitable digital investment, and accessible mechanisms for contesting automated outcomes.

Keywords

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Introduction

Artificial intelligence (AI), learning analytics, predictive modelling, recommender systems, and automated decision tools have moved from peripheral educational technologies to infrastructures that increasingly shape how universities organize teaching, student support, assessment, and administration. Recent syntheses show both rapid growth in AI-related higher-education research and persistent concerns about ethics, methodological rigor, and the distribution of benefits [1]–[3]. As algorithmic systems become embedded in institutional processes, questions of governance become as important as questions of technical performance: who defines the objectives encoded in a system, which data are considered legitimate, how decisions can be challenged, and which groups are advantaged or disadvantaged by data-driven classifications [4], [5].

These questions are particularly consequential in China, where digital transformation is closely connected to national strategies for smart education, public digital infrastructure, and institutional modernization. Evidence from Chinese universities indicates growing experimentation with AI in administration, student services, teaching, and research, alongside concerns about digital literacy, funding, data security, and uneven institutional capacity [6]. Policy analyses further show that AI adoption is shaped by a comparatively centralized regulatory environment in mainland China, although institutional interpretation and implementation still vary [7], [8]. China's emerging smart-education agenda explicitly links technological modernization with governance and educational equity, making the relationship between algorithmic optimization and inequality a central policy problem rather than a secondary ethical issue [9].

The equity problem is not reducible to whether a particular algorithm is statistically biased. The institutional effects of algorithmic governance also depend on the distribution of digital infrastructure, socioeconomic resources, regional development, cultural capital, and the ability of students and institutions to understand and contest automated decisions. Recent evidence from central and western China documents unequal conditions for the use of AI tools [10], while research on cultural capital and on the institutional stratification of Chinese higher education demonstrates that educational advantage is already unevenly distributed before algorithmic systems are introduced [11]–[13]. Algorithmic systems may therefore amplify pre-existing differences even when they are designed to improve efficiency. At the same time, critical reviews of AI in education caution against assuming that technological adoption automatically produces either inclusion or exclusion; effects depend on design, implementation, governance, and the social context in which the technology is used [14], [15].

Existing scholarship thus contains two partially disconnected narratives. One emphasizes optimization: automation can streamline administrative work, support early identification of academic risk, improve resource allocation, and increase the responsiveness of institutional decision-making. The other emphasizes social reproduction: opaque classification, biased training data, differential access to digital resources, and surveillance-intensive systems can reproduce existing hierarchies while presenting outcomes as technologically neutral. What remains insufficiently synthesized is how these narratives coexist in the specific institutional and policy context of Chinese higher education, and which conditions mediate the balance between them.

This review addresses that gap by asking three questions: (1) how is algorithmic governance being used in Chinese higher education, particularly in admissions, academic monitoring, assessment, and resource allocation; (2) what institutional optimization effects and equity-related risks are reported; and (3) through which socioeconomic, regional, infrastructural, and governance mechanisms can algorithmic systems reproduce or disrupt educational inequality? The article first develops a socio-technical framework linking algorithmic governance with social reproduction, then reports the PRISMA-based review methods, synthesizes the characteristics and findings of the 49 included studies, and discusses implications for governance, equity, and future research.

Literature Review

A. Algorithmic Governance as a Socio-Technical Regime

Algorithmic governance refers here to the institutional use and regulation of data-driven systems that classify, predict, recommend, monitor, or automate decisions. This definition is broader than the use of digital educational tools. A learning platform, dashboard, or AI assistant becomes an object of algorithmic governance when its outputs begin to structure institutional choices, allocate opportunities, trigger interventions, or establish categories through which students and organizations are evaluated. The distinction matters because the social effects of an algorithm are produced not only by code but also by the data selected, the institutional objectives specified, the thresholds chosen, the human discretion retained, and the procedures available for review or appeal.

Algorithmic governmentality describes forms of regulation in which large-scale data processing anticipates and shapes conduct before individuals necessarily understand or contest the categories applied to them [16]. Related work emphasizes that algorithms are neither neutral nor self-executing: they embed institutional assumptions, classifications, and value judgments [17], and they acquire social power when their outputs become authoritative within

organizational routines [18]. In education, datafication extends these dynamics by transforming learning, performance, participation, and institutional quality into increasingly measurable and actionable data objects [19]. The critical issue is therefore not whether universities should use data, but how algorithmic authority is constituted and constrained.

B. Social Reproduction, Digital Inequality, and Chinese Higher Education

Social reproduction theory provides a complementary lens for explaining why apparently meritocratic systems can preserve inequality. Educational institutions may reward forms of cultural, social, and material capital that are unequally distributed, thereby converting prior social advantage into recognized academic advantage [20]. In digitally mediated education, these mechanisms can be extended through access to high-quality devices, connectivity, AI literacy, English-language resources, paid tutoring, and the institutional capacity to deploy advanced systems. Critical scholarship on educational technology similarly argues that technologies are embedded in existing institutional structures rather than operating independently of them [21].

In China, the relevance of this perspective is strengthened by evidence of regional and institutional stratification. Elite universities and institutions in economically stronger regions possess greater research capacity and material resources, while central and western regions face more uneven digital development [10], [12], [13]. If an algorithm uses historical performance, institutional prestige, behavioral traces, or standardized participation indicators as inputs, inequalities embedded in those inputs can become part of an apparently objective decision system. Conversely, well-governed systems can potentially identify underserved groups, target support, and widen access. The analytical task is therefore to examine both pathways rather than treating optimization and inequality as mutually exclusive outcomes.

Recent work on fairness and ethics strengthens this governance-oriented interpretation. Studies of educational algorithms identify risks of disparate performance and recommend context-sensitive fairness assessment [22]. Reviews of AI ethics in education repeatedly identify privacy, transparency, accountability, autonomy, and bias as unresolved concerns [23]–[25]. Universities have begun responding through institutional policies, but the clarity and practical effectiveness of those policies remain uneven [26], [27]. Faculty capacity is another key condition: adoption is mediated by AI literacy, self-efficacy, training, and organizational support [28]. Broader syntheses of higher-education AI research likewise call for more rigorous, inclusive, and ethically grounded research rather than purely technology-centered evaluation [29]–[31].

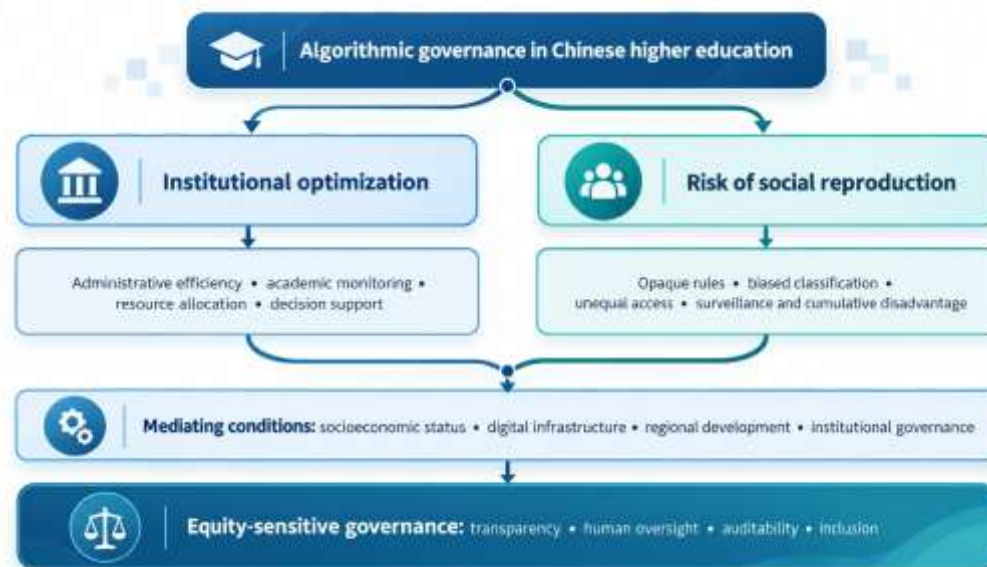


Fig. 1. Conceptual model of the dual pathway from algorithmic governance to institutional optimization and social reproduction.

Fig. 1 summarizes the framework used for synthesis. Algorithmic governance can produce optimization benefits and social-reproduction risks simultaneously. The direction and magnitude of those effects are conditioned by socioeconomic status, digital infrastructure, regional development, and institutional governance. Equity-sensitive governance is therefore treated as a set of institutional safeguards—transparency, human oversight, auditability, inclusion, and mechanisms for contesting decisions—rather than as an inherent property of AI technology.

Material and Methods

A. Review Design and Scope

A systematic literature review was conducted and reported in accordance with PRISMA 2020 [32]. The review focused on algorithmic governance, AI-enabled decision systems, digital governance, and educational inequality in Chinese higher education. The review was designed as a qualitative thematic synthesis rather than a meta-analysis because the included literature encompassed heterogeneous qualitative, quantitative, mixed-method, theoretical, and review designs and did not provide a common effect-size metric. No preregistered protocol was reported; accordingly, no protocol registration is claimed.

B. Eligibility Criteria and Information Sources

Studies were eligible when they addressed universities or higher education in China and examined algorithmic governance, artificial intelligence, digital governance, educational technologies with governance implications, or educational inequality/social reproduction. Empirical qualitative, quantitative, mixed-method, theoretical, systematic-review, and

bibliometric studies were eligible, as were peer-reviewed conference papers and research reports with sufficient analytical transparency. English- or Chinese-language publications dated from 2010 through 2026 were considered. Duplicates, studies outside higher education, publications without sufficient methodological or analytical transparency, non-academic opinion pieces, unavailable documents, and studies unrelated to algorithmic governance or educational inequality were excluded.

The systematic search was conducted between April and May 2026 using six search sources: Scopus, Web of Science, ERIC, Google Scholar, SpringerLink, and ScienceDirect. Because these platforms use different indexing conventions, the Boolean syntax was adapted while retaining the same four concept blocks: algorithmic governance/AI, higher education, China, and educational inequality/social reproduction. Table 1 records the harmonized search logic used in the review.

Table 1. Search sources and harmonized search logic.

Search source	Search logic
Scopus	TITLE-ABS-KEY(("algorithmic governance" OR "artificial intelligence" OR AI OR "digital governance") AND ("higher education" OR universit*) AND (China OR Chinese) AND ("educational inequalit*" OR "social reproduction"))
Web of Science	TS=(("algorithmic governance" OR "artificial intelligence" OR AI OR "digital governance") AND ("higher education" OR universit*) AND (China OR Chinese) AND ("educational inequalit*" OR "social reproduction"))
ERIC	("algorithmic governance" OR AI OR "digital governance") AND ("higher education" OR universities) AND China AND ("educational inequality" OR "social reproduction")
Google Scholar	Combinations of: "algorithmic governance" + "Chinese higher education"; "artificial intelligence" + China + universities; "digital governance" + "educational inequality"
SpringerLink	("algorithmic governance" OR AI) AND "higher education" AND China AND ("educational inequality" OR "social reproduction")
ScienceDirect	("algorithmic governance" OR "artificial intelligence") AND "Chinese higher education" AND ("educational inequality" OR "digital governance")

C. Study Selection

The searches identified 1,286 records. After 214 duplicates were removed, 1,072 titles and abstracts were screened. At this stage, 904 records were excluded because they did not address Chinese higher education, did not concern algorithmic governance, or otherwise failed the eligibility criteria. The remaining 168 full-text reports were assessed. Of these, 119 were excluded: 53 examined other levels of education, 46 did not meet the stated methodological-rigor threshold, and 20 did not specifically address algorithmic governance in Chinese higher education. The final qualitative synthesis therefore included 49 studies, with the counts reconciling across identification, screening, and eligibility stages.

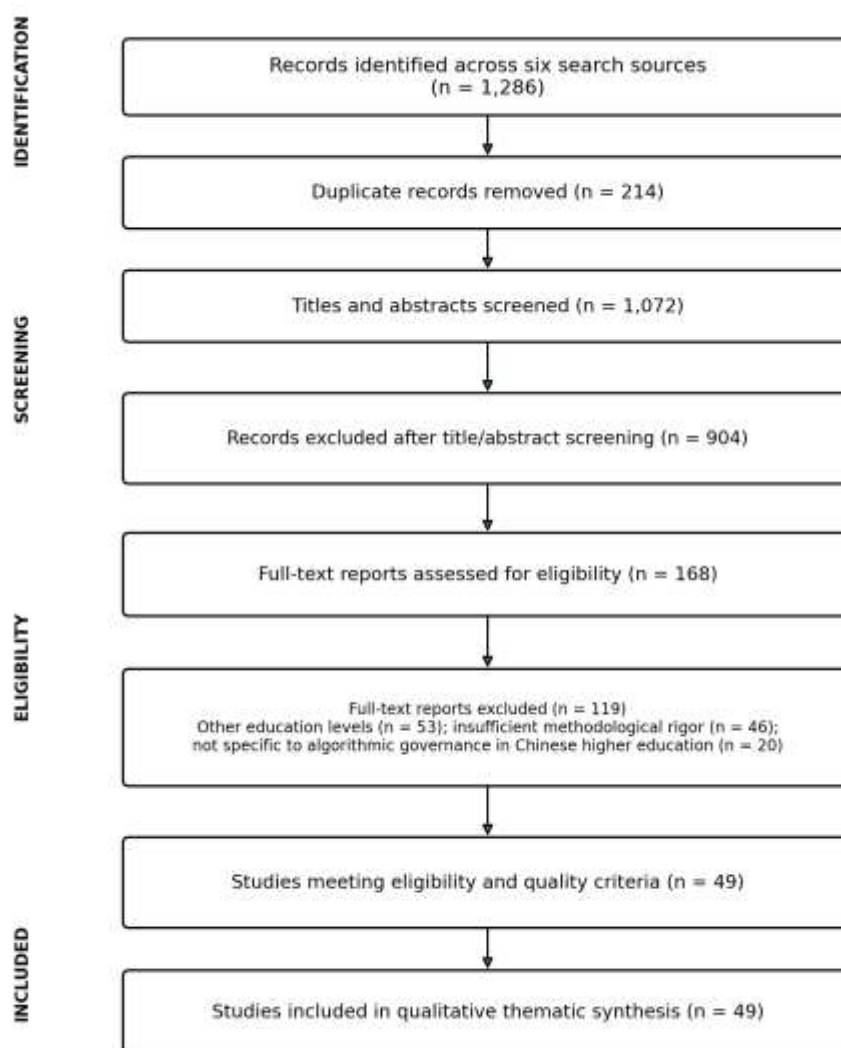


Fig. 2. PRISMA 2020 flow diagram for study identification, screening, eligibility assessment, and inclusion.

D. Data Extraction, Quality Appraisal, and Synthesis

For each included study, the review extracted publication year, research design, study context, geographical focus, primary research focus, type of algorithmic or AI-enabled system, reported institutional benefits, reported inequality or ethical concerns, and mediating conditions. The synthesis used iterative thematic coding to group recurring evidence into four domains: algorithmic use, institutional optimization, educational inequality/social reproduction, and mediating conditions. Because a single study could contribute to more than one theme, thematic counts are non-mutually exclusive and should not be summed to 100%.

Quality appraisal used a structured four-domain rubric covering clarity of research objectives, methodological rigor, validity/reliability of evidence, and transparency/coherence of analysis

and conclusions. No named standardized appraisal instrument was specified; the procedure is therefore reported as an author-developed quality rubric rather than attributed to an external tool. Studies rated low quality were excluded before the final synthesis. Among the 49 retained studies, 31 were rated high quality and 18 moderate quality, as shown in Table 2.

Table 2. Quality distribution of the included studies (n = 49).

Quality level	Operational criterion	n	%
High	Clear objectives; rigorous method; valid/reliable evidence; transparent analysis and coherent conclusions	31	63.3
Moderate	Minor methodological limitations but sufficient rigor and transparency for synthesis	18	36.7
Low	Major methodological weakness or insufficient reporting; excluded before final synthesis	0	0.0
Total	Studies retained for qualitative synthesis	49	100.0

E. Ethical Considerations

The review analyzed publicly available scholarly and institutional sources and did not collect data from human participants. Formal human-subject ethics approval was therefore not required for the review itself. Academic integrity was addressed through source attribution, transparent reporting of selection criteria, and explicit separation between evidence from the included review corpus and contextual literature used to strengthen interpretation.

Results

A. Search Outcome and Characteristics of the Evidence Base

The final evidence base comprised 49 studies. Although the eligibility window extended from 2010 to 2026, all retained studies were published from 2017 onward. Publication activity was strongly concentrated in recent years: 30 studies (61.3%) appeared in 2024–2026, compared with 11 (22.4%) in 2021–2023 and eight (16.3%) in 2017–2020. This distribution indicates that algorithmic governance in higher education is a rapidly consolidating research area rather than a mature field with a long empirical history.

Qualitative studies formed the largest methodological group (n = 22, 44.9%), followed by mixed-method studies (n = 15, 30.6%), quantitative studies (n = 8, 16.3%), and systematic or bibliometric reviews (n = 4, 8.2%). Thirty-eight studies (77.6%) focused directly on Chinese universities, whereas 11 (22.4%) used comparative or international designs that included evidence relevant to China. The geographical distribution was uneven: 36 studies (73.5%) focused on eastern or coastal universities and only 13 (26.5%) on central and western regions. Consequently, the synthesized evidence is much stronger for institutions located in comparatively well-resourced areas than for those in less-developed regions.

Table 3. Characteristics of the included studies (n = 49).

Characteristic	Category	n	%
Publication period	2017–2020	8	16.3
	2021–2023	11	22.4
	2024–2026	30	61.3
Research design	Qualitative	22	44.9
	Mixed methods	15	30.6
	Quantitative	8	16.3
	Systematic/bibliometric review	4	8.2
Study context	Chinese universities	38	77.6
	Comparative/international	11	22.4
Primary focus	Algorithmic governance	18	36.7
	AI in higher education	14	28.6
	Digital governance	9	18.4
	Educational inequality/social reproduction	8	16.3
Geographical focus in China	Eastern/coastal	36	73.5
	Central/western	13	26.5

B. Algorithmic Uses and Institutional Optimization

Thirty-eight of the 49 studies (77.6%) reported applications that can be understood as AI-enabled or algorithmic governance, including smart-campus technologies, learning analytics, facial recognition, automated assessment, and predictive analytics. Across these applications, the most frequently emphasized institutional rationale was optimization. Thirty-four studies (69.4%) identified benefits related to administrative efficiency, data-supported decision-making, academic monitoring, resource allocation, or institutional coordination. The literature therefore supports the claim that algorithmic systems are not merely experimental tools; they are increasingly treated as management infrastructures capable of reorganizing routine institutional work.

Optimization, however, was not uniformly described as a simple performance gain. Twenty-four studies (49.0%) that discussed efficiency or automation also raised concerns about transparency, accountability, or algorithmic bias. This coexistence is analytically important: the same system can reduce administrative workload while simultaneously making the basis of a consequential decision less visible to students. The evidence is therefore better represented as a trade-off and governance problem than as a binary distinction between beneficial and harmful technologies. This interpretation is consistent with recent governance scholarship that treats algorithmic decisions as institutional and policy decisions rather than purely technical outputs [4].

C. Educational Inequality and Social Reproduction

Thirty-one studies (63.3%) reported that algorithmic or AI-enabled governance could reproduce or intensify educational inequality, particularly for students from rural areas, lower socioeconomic backgrounds, or digitally disadvantaged communities. Twenty-nine studies

(59.2%) specifically identified unequal digital resources, differential access to technology, cultural or institutional capital, or related disparities as mechanisms shaping participation and outcomes. These findings do not mean that every system produced demonstrable discrimination. Rather, the corpus repeatedly showed that algorithmic decisions operate on top of unequal educational conditions, making pre-existing inequalities relevant to the interpretation of automated outcomes.

A further 21 studies (42.9%) examined or discussed facial recognition, AI-based monitoring, or automated learning analytics used to monitor attendance, engagement, or academic performance. Such systems expand institutional visibility over student behavior, but they also raise questions about privacy, proportionality, and the extent to which behavioral data can validly represent learning. The privacy and governance concerns identified in the review are consistent with contemporary research comparing Chinese and Western debates on AI privacy in higher education [15] and with broader reviews identifying transparency and user autonomy as recurring ethical gaps [23]–[25].

The regional structure of the evidence base also matters. The predominance of studies from eastern and coastal universities means that the most visible examples of digital modernization come from institutions with relatively strong infrastructure. Recent research focusing on central and western China indicates that infrastructure, access, and institutional readiness can differ substantially [10]. The review therefore cautions against generalizing from elite metropolitan universities to the entire Chinese higher-education system. Algorithmic governance may have different consequences when the technical environment, institutional support, and students' digital resources are weaker.

D. Mediating Conditions and Cross-Cutting Synthesis

Four mediating conditions recurred across the evidence. Socioeconomic status was identified in 27 studies (55.1%), digital infrastructure in 23 (46.9%), regional disparities in 20 (40.8%), and institutional governance arrangements in 18 (36.7%). These themes overlap: a student's socioeconomic resources influence access to devices and digital literacy; regional development shapes institutional infrastructure; and governance arrangements determine whether automated outputs are audited, explained, or subject to human review. Accordingly, inequality cannot be attributed to a single algorithmic feature in isolation.

Taken together, the evidence supports a dual-outcome interpretation. Thirty-four studies (69.4%) reported institutional optimization benefits, while 31 studies (63.3%) identified risks of inequality or social reproduction. These categories were not mutually exclusive; many studies reported institutional gains while simultaneously identifying equity-related risks. The synthesis

therefore treats optimization and social reproduction as overlapping outcomes rather than competing explanations.

Table 4. Cross-cutting thematic findings from the 49 included studies.

Finding/theme	n	%	Interpretive meaning
AI-enabled governance systems reported	38	77.6	Smart campus, learning analytics, facial recognition, automated assessment, predictive analytics
Institutional optimization benefits	34	69.4	Administrative efficiency, academic monitoring, resource allocation, decision support
Risk of reproducing/intensifying inequality	31	63.3	Disproportionate risks for rural, low-SES, or digitally disadvantaged students
Unequal digital/resource conditions	29	59.2	Differential infrastructure, technology access, cultural/institutional capital
Transparency/accountability/bias concerns	24	49.0	Opacity, accountability gaps, bias, limited contestability
Monitoring/surveillance applications	21	42.9	Facial recognition, AI monitoring, automated learning analytics
Socioeconomic status as mediator	27	55.1	Household resources and cumulative educational advantage
Digital infrastructure as mediator	23	46.9	Connectivity, hardware, platforms, and institutional technical capacity
Regional disparity as mediator	20	40.8	Eastern/coastal versus central/western differences
Institutional governance as mediator	18	36.7	Rules, oversight, accountability, and implementation capacity

Discussion

A. Interpreting the Optimization–Reproduction Tension

The principal finding of this review is that algorithmic governance in Chinese higher education is best understood as a dual-use institutional process. The evidence does not support a simple conclusion that algorithmic systems are either efficient tools or mechanisms of inequality. Rather, they can be both. Administrative automation, predictive analytics, and data-supported allocation can increase the speed and consistency of institutional processes, but the resulting systems also formalize categories, thresholds, and performance indicators that may carry forward inequalities already present in educational data. This interpretation aligns with the view that algorithms exercise social power through institutional classification and ordering [17]–[19].

The social-reproduction perspective adds an important mechanism. Educational inequality predates digital governance. Socioeconomic resources, cultural capital, institutional prestige, and regional development influence students' opportunities and the resources available to universities [10]–[13], [20]. When data generated under unequal conditions become inputs to predictive or classificatory systems, existing disadvantage can be translated into risk scores, recommendations, or intervention priorities. The appearance of computational objectivity may

then obscure the social history embedded in the data. This is why fairness cannot be reduced to technical accuracy alone and why context-specific debiasing and validation are necessary [22].

B. Governance Implications for Chinese Higher Education

The Chinese context makes governance design particularly consequential. AI adoption is occurring within a policy environment that combines national digital-education goals with institution-level implementation [7]–[9]. Central coordination can create advantages: common infrastructure, national standards, and policy direction can reduce fragmentation. At the same time, centralized deployment can scale weaknesses as well as strengths. If data definitions, model thresholds, or monitoring practices are poorly governed, their effects can extend across large populations before affected students have clear mechanisms to understand or contest them.

Five governance requirements follow from the synthesis. First, consequential algorithmic decisions should be explainable at the level relevant to students and staff: institutions need to disclose what data categories are used, what decision the system supports, and whether a human can override the output. Second, human oversight must be substantive rather than symbolic. A nominal human-in-the-loop process is insufficient if staff lack authority, time, or expertise to question the system. Third, bias auditing should examine subgroup performance and disparate effects across socioeconomic, regional, linguistic, and disability-related dimensions where data permit. Fourth, institutions should provide accessible appeal and correction procedures for inaccurate data and contested classifications. Fifth, digital investment should be equity-sensitive; expanding sophisticated AI services without addressing underlying infrastructure and literacy gaps can increase rather than reduce inequality.

These requirements are consistent with recent international evidence. Ethical reviews emphasize transparency, accountability, privacy, and human-centered design [5], [23]–[25], while institutional-policy research shows that rules must be understandable and connected to practical support if they are to shape behavior [26], [27]. Faculty capacity also matters because responsible implementation depends on users who can interpret AI outputs and recognize limitations [28]. In this sense, governance quality is not a compliance layer added after adoption; it is part of the educational effectiveness of the technology itself.

C. Theoretical and Research Implications

The review extends social reproduction theory into a datafied institutional environment. Traditional accounts emphasize how schools convert unequal distributions of capital into legitimate educational outcomes [20]. Algorithmic governance adds a new conversion mechanism: social and institutional differences can be encoded in datasets, transformed into predictive categories, and reintroduced into decision processes as quantified evidence. This does not imply technological determinism. The same data infrastructure can also be used to identify

disparities, direct resources to underserved students, and evaluate whether policies are equitable. The key theoretical variable is therefore governance: the rules that determine what data mean, how outputs are used, and how decisions remain accountable to educational purposes.

The evidence also suggests a need to move beyond generic studies of “AI in education.” Recent reviews have already called for stronger ethical and methodological rigor [1], [29]–[31]. Future research in China should distinguish between low-stakes instructional assistance and high-stakes governance applications such as admissions, scholarship allocation, academic-risk classification, disciplinary monitoring, or progression decisions. These uses differ substantially in their consequences and therefore require different standards of validation, transparency, and due process.

Limitation and Suggestions

This review has several limitations. First, the underlying evidence base is geographically imbalanced: 73.5% of the included studies focused on eastern or coastal universities, so the synthesis may underrepresent central and western institutions. Second, the included studies were methodologically heterogeneous, and the review therefore reports thematic frequencies rather than pooled causal effects. Third, the review used a structured author-developed quality rubric but did not report a named standardized appraisal tool, an inter-rater reliability statistic, or a preregistered protocol. These omissions limit the reproducibility of the quality assessment and should be addressed in future updates. Fourth, algorithmic systems and policy frameworks are changing rapidly, so findings from earlier studies may not represent current deployments. Finally, many high-stakes systems are proprietary or institutionally closed, constraining independent evaluation of model logic and subgroup performance.

Future studies should prioritize multi-site and longitudinal designs that include central and western China, document the specific algorithmic systems and decision points being evaluated, and report subgroup performance rather than overall accuracy alone. Mixed-method research should combine technical audit data with interviews or participatory methods that capture how students and staff experience automated classification. Comparative studies across Chinese regions and across governance systems would help separate technology-specific effects from institutional and policy effects. Where high-stakes decisions are involved, researchers should also examine contestability, appeal, data correction, and the practical authority of human reviewers.

Conclusion

This systematic review synthesizes 49 studies on algorithmic governance and educational inequality in Chinese higher education. The evidence shows that algorithmic systems are

increasingly used to support smart-campus management, academic monitoring, automated assessment, prediction, and resource allocation. Thirty-four studies (69.4%) reported institutional optimization benefits, while 31 (63.3%) identified risks of reproducing or intensifying educational inequality. The most important mediating conditions were socioeconomic status, digital infrastructure, regional disparities, and institutional governance. These findings resolve the central tension in the literature: modernization and inequality are not competing explanations but simultaneous possibilities produced by the same socio-technical systems.

The contribution of the review is therefore conceptual as well as empirical. Algorithmic governance should not be evaluated only by whether it makes university processes faster or more accurate. It should also be evaluated by how it redistributes visibility, opportunity, discretion, and the ability to challenge institutional decisions. In Chinese higher education, aligning digital modernization with equity requires transparent decision rules, meaningful human oversight, systematic bias auditing, equitable infrastructure investment, and accessible mechanisms for contesting automated outcomes. Without these safeguards, algorithmic systems may convert historically unequal conditions into apparently neutral digital classifications; with them, data-driven governance can be directed toward institutional improvement without treating efficiency as a substitute for educational justice.

Conflict of Interest

The authors declare no conflict of interest.

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Authors



Teme Hamadi is an education researcher affiliated with the College of Education at Zhejiang Normal University, Jinhua, China. His research addresses higher education, blended learning, teacher education, educational reform, and the effects of conflict on schooling. He has contributed to studies examining blended learning adoption in Mali and Burkina Faso, teacher preparation in Finland, and education in conflict-affected Malian communities. His current work also examines algorithmic governance, institutional optimization, and educational inequality in Chinese higher education. (email: amaditeme@gmail.com).



Rushuang Yu is affiliated with the College of Education at Zhejiang Normal University in Jinhua, China. A university event record identified her as an assistant professor of education and a visiting scholar participating in international academic exchange. Her scholarly interests include higher education, comparative education, educational development, institutional reform, and education policy. Conference and publication records associate her work with Chinese and Macao higher education. Her current research also examines algorithmic governance and educational inequality in Chinese universities. (email: yurushuang@zjnu.edu.cn).