Higher Education and Practice Vol. 3 No. 3, 2026

Measuring Criteria and the Realization of Connotative Development in the Popularization of Higher Education

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Abstract: The popularization of higher education represents a critical milestone in a nation's educational development. In 2019, China's gross enrollment ratio (GER) in higher education surpassed 50%, marking its official entry into the popularization stage according to Martin Trow's widely accepted theoretical framework. However, whether this quantitative threshold alone adequately captures the complexity of China's higher education transformation warrants careful examination. This study adopts a multi-dimensional analytical approach grounded in Trow's stage theory, examining higher education development across eight key dimensions: institutional scale and function, societal conceptions of higher education, curriculum and pedagogical forms, institutional diversity and boundaries, leadership and decision-making structures, academic standards and management, admission and selection mechanisms, and internal governance. The analysis reveals that while China has achieved the numerical threshold of popularization, substantial gaps persist in qualitative dimensions such as teaching methodologies, institutional diversity, governance structures, and educational functions, indicating that the system remains largely in transition from mass to truly popularized higher education. Based on these findings, this paper proposes five strategic measures to facilitate the shift from "numerical" to "connotative" popularization: establishing a categorized quality assurance system, promoting integrated online-offline learning, advancing the convergence of vocational and general education, optimizing the higher education governance system, and enhancing internationalization. These findings suggest that China's higher education development requires a comprehensive and connotative transformation beyond mere quantitative expansion.

Keywords: Higher Education Popularization; Connotative Development; Martin Trow's Stage Theory; Quality Assurance System; China's Higher Education Reform

1. Introduction

Higher education refers to specialized and vocational education conducted on the basis of secondary education. It is a major social activity aimed at cultivating advanced specialized talents and professionals. As one of the interconnected and essential components of the education system, higher education typically encompasses various educational institutions whose primary missions include advanced learning and training, teaching, research, and social service.

The latter half of the 20th century marked an extraordinary period of expansion and qualitative transformation in the history of higher education. The rapid growth in societal demand for highly specialized talents, coupled with the urgent individual need for access to higher education, propelled unprecedented development, moving higher education from elite to mass education.

According to official statistics, by 2019 China's total enrollment in various forms of higher education reached 40.02 million, with a gross enrollment ratio of 51.6% [1]. This milestone triggered extensive scholarly discussion regarding the substantive nature of China's higher education popularization and whether numerical benchmarks adequately reflect genuine developmental transformation.

1.1 The Numerical Standard of Popularization in Public Perception

When discussing the popularization of higher education, the first issue that arises is the standard. Some may consider this a straightforward matter, given that Martin Trow proposed his theory of stages of higher education

development in the 1960s and 1970s [2]. According to Trow, in quantitative terms, when the gross enrollment ratio exceeds 15%, higher education enters the massification stage; when it exceeds 50%, it enters the popularization stage. Thus, a GER exceeding 50% has become the benchmark for popularization. However, whether this standard is applicable to China and whether it adequately explains the stage-specific characteristics and transformations of China's higher education development remain to be further examined.

Beyond the gross enrollment ratio, other quantitative indicators include the net enrollment ratio, the number of higher education students per 100,000 population, and the proportion of the labor force with higher education experience. While all these quantitative measures reflect the level of higher education development, they emphasize different aspects.

The development of higher education involves not merely quantitative growth but also changes in the status and structure of higher education, the fulfillment of its functions, and the adjustment of its relationships with related social fields. Therefore, analyzing China's higher education popularization cannot rely on a single criterion; rather, a comprehensive evaluation is required to achieve the transition from "numerical" to "connotative" popularization.

2. Measuring Criteria for the Connotative Development of Higher Education Popularization

The development of higher education involves not only quantitative changes but also shifts in the status and structure of higher education, the fulfillment of its functions, and the adjustment of its relationships with related social fields. Consequently, the analysis of China's higher education popularization should not rely on a single measure but rather on a comprehensive assessment, striving to realize a leap from "numerical" popularization to "connotative" popularization.

2.1 The Scale and Functions of Higher Education

In modern times, when the scale of a nation's elite higher education expands to provide learning opportunities for more than 50% of the appropriate age cohort, that nation's higher education begins to advance rapidly toward popularization. At this point, nearly half of all families can send their children to various higher education institutions. In mass higher education, the function of higher education remains the cultivation of elites, albeit a broader range of elites encompassing the leadership strata of all technical and economic organizations in society. The focus shifts from character formation to the cultivation of more specialized technical elites. In popularized higher education institutions, for the first time, higher education prepares the majority of people in developed industrial societies for life. It aims not only to cultivate elites, whether broad or narrow, but to educate all people, with its primary purpose being to enhance individuals' adaptability to a rapidly changing society [3].

Evidently, the function of higher education in China remains at the transitional stage from mass to popularized higher education and has not yet fully entered the popularization phase.

2.2 Conceptions of Higher Education

The increase in higher education enrollment opportunities is closely related to people's perceptions of higher education. When enrollment is extremely limited, receiving higher education is widely regarded as a privilege for those of good birth, talent, or both. As the enrollment rate reaches 15% of the age cohort, people gradually come to view higher education as a right for those possessing certain qualifications. When the enrollment rate reaches 50% of the population, receiving higher education is increasingly seen as an obligation. Moreover, as more people receive higher education, the best job opportunities and economic rewards go to those with university degrees, which in turn strongly encourages students to regard attending university as an obligation.

2.3 Curriculum and Teaching Forms

Curriculum and teaching practices reflect changes in the meaning of being a student and the functions that higher education performs for both students and society [4]. In elite higher education, curricula tend to be highly structured, reflecting either the academic concept of degree programs or the professional concept of specialized requirements. In mass higher education, education becomes more modular, characterized by semi-structured course sequences that are more flexible, accessible, and allow for greater mobility across major fields or

institutions. In the early stage of popularized higher education, modular courses persist, but the structure of teaching increasingly weakens and the boundaries between courses begin to break down.

The forms of teaching and the relationships between teachers and students differ across these three stages. In elite higher education, the defining feature of teaching is individualized instruction or seminars, and the relationship between teachers and students is personal, consistent with the core function of character formation and elite cultivation. In mass higher education, the emphasis is on the transmission of knowledge and skills, with normal teaching conducted primarily through lectures supplemented by discussion-based approaches. In the popularization stage, the direct personal relationship between students and teachers is subordinated to students' broader engagement with new or more complex perspectives, relying more on correspondence, television, computers, and other technologies for instruction.

By comparison, China's higher education teaching methods remain largely at the stage of mass higher education but are gradually transitioning toward the popularization phase.

2.4 Diversity, Characteristics, and Boundaries of Higher Education

Higher education systems exhibit different degrees of diversity at different developmental stages. Elite higher education is characterized by a high degree of uniformity. Mass higher education, while maintaining some connections across various sectors of the system to allow student and faculty mobility, becomes more comprehensive and adopts more diverse standards. Popularized higher education institutions are characterized by even greater diversity, with no shared standards among them. Across these three systems, typical institutional models also differ in scale and characteristics.

Elite higher education institutions are typically small communities of two to three thousand boarding students. The hallmark of mass higher education is comprehensive institutions that are not small communities but rather "university towns" of thirty to forty thousand students and faculty combining residential and commuter populations. In popularized higher education, scale is unrestricted; people gather only for the purpose of instruction. Most students rarely or never visit the main campus. They share little in common and do not constitute a closely-knit community in any meaningful sense; there are no common standards, values, or identity [5].

Elite higher education institutions are separated from the external society by clear and impenetrable boundaries—sometimes even by physical walls. In mass higher education institutions, boundaries still exist but are more blurred and permeable; mobility within and between mass institutions is relatively easy, and the concept of "membership" is less clear, although the notion of formal membership associated with various academic or non-academic purposes persists. In popularized higher education, boundaries have become minimal and are gradually disappearing. At any given moment, anyone who turns on a television to watch an educational lecture can be considered a member of that "television broadcasting university," regardless of whether they have submitted assignments or officially registered.

2.5 Leadership and Decision-Making

In elite higher education institutions, the highest leadership and effective decision-making are controlled by a relatively small group of elites who are leaders in important institutional, political, economic, and academic spheres. They know one another, share common values and intellectual frameworks, and make decisions through informal direct contact. Mass higher education continues to be influenced by these elite groups, but decisions are increasingly determined by democratic political processes and shaped by stakeholders—segments of the general public who hold specific interests and qualifications and share common views on higher education as a whole or on particular aspects, such as the form and content of technical education. Higher education policy becomes progressively more subject to the general political processes of interest groups and party platforms.

As higher education moves toward popularization, its sphere of influence expands, affecting not only those who have received or are currently receiving higher education but also their relatives and friends. Furthermore, universities and colleges—the venues where teachers and students engage in teaching and activities—attract widespread attention. They appear not only in major newspapers and journals but also in popular magazines and on

television. This also draws the attention of the general public, who increasingly view themselves as having a legitimate interest in the operation of higher education, if only because of its enormous expenditures and profound social impact. These individuals express their views through letters to officials and by voting in elections. The public concerned with higher education and capable of influencing its policies has changed in both number and character, profoundly affecting the nature and content of discussions on higher education issues, as well as who participates in and makes decisions.

2.6 Academic Standards and Management Forms

The meaning of academic standards is clear: in elite higher education systems and institutions, at least during the elite stage, there are generally common and relatively high academic standards. In mass higher education, academic standards become more diverse [6], with variations in rigor and character across different institutions and systems, as they accompany different types of academic units. In popularized higher education, there are also different criteria for evaluating achievement: rather than measuring achievement against academic standards, it is assessed in terms of the "value added" by the educational experience. Like non-academic forms of primary and secondary education, this becomes the basis for evaluation in popularized higher education. This fundamentally changes the basis for judging individuals and learning activities.

Forms of institutional management also differ across the three developmental stages. In typical elite universities, academic personnel concurrently hold administrative positions and are essentially part-time administrators. In the mass stage, as higher education institutions grow in scale and diversify in function, the administrative workforce expands accordingly. Academic leaders are increasingly replaced by professional university managers. As higher education scales up and transitions toward popularization, the enormous costs demand greater fiscal responsibility and more complex management forms, leading universities to hire increasing numbers of full-time specialists.

2.7 Admission and Selection

The principles of student selection vary across different stages of higher education development. In elite higher education, admission criteria based on birth and status have been replaced over the past few decades by meritocratic achievement measured through specific examination scores and secondary school performance. In mass higher education, although meritocratic criteria as admission restrictions remain widely accepted, they have been diluted by the concept of equal educational opportunity. People seek to reduce inequality in access for socially disadvantaged groups and strata through compensatory programs and by introducing other non-academic criteria. In the popularization stage, higher education is open to all who wish to enroll or are qualified to do so, with the standard being an individual's willingness to attend university [7]. The goal of popularized higher education is to achieve equality of group achievement rather than equality of individual opportunity, aiming to rationalize the distribution of social classes, ethnicities, and nationalities within higher education.

2.8 Internal Governance of Higher Education

The forms and processes of internal governance vary considerably across countries and institutions. However, in general, elite higher education tends to be controlled by senior professors, while those without such qualifications play little or no role in major institutional decisions. As the number of higher education personnel, particularly non-academic staff, increases, the latter have gradually challenged the monopolistic power of the so-called professorial governance. In mass higher education, junior staff at different levels enjoy institutional management rights, and students increasingly possess the right to influence decision-making [8].

The dimensions discussed above are key to achieving the connotative development of higher education popularization beyond numerical standards. However, it must be emphasized that the transition from elite to mass to popular does not imply that the forms and models of the preceding stage necessarily disappear or transform. On the contrary, evidence shows that as higher education as a whole gradually moves to the next stage, accommodating more students and performing more diverse functions, the models of the preceding stage persist in some universities or other higher education institutions. The analysis of stages of higher education development should not assume that

all components or elements change at an equal pace and that higher education transitions smoothly to the next stage. In reality, development is highly uneven.

3. Measures for Realizing the Connotative Development of Higher Education Popularization

China's higher education should take the transformation of educational thought and concepts as a guide, deepen comprehensive reform in the education sector as a driving force, and address key and difficult practical problems as a starting point. It should concentrate efforts on connotation construction, improve quality, optimize structure, better meet the needs of economic and social development and the public's selective demand for high-quality higher education resources, and lay a solid foundation for building a strong nation in higher education.

3.1 Building a Quality Assurance System for Categorized Development

As higher education enters the popularization stage, it faces both rare opportunities and severe challenges both within and outside the education system. While world higher education quality assurance exhibits certain common development trends, the construction of a higher education quality assurance system with Chinese characteristics should be based on China's practical explorations. This requires updating educational development concepts, establishing diversified quality standards, promoting the improvement of internal quality assurance systems in universities, and realizing the categorized development of different types of institutions to meet the diverse and individualized educational needs of the public in the context of popularization.

First, a diversified higher education quality assurance system should be established. Building upon the five-in-one quality evaluation activities—self-assessment, institutional evaluation, professional accreditation, routine monitoring of status data, and international evaluation—a higher education quality assurance system with Chinese characteristics should be developed. Second, the principal role of universities in quality assurance should be affirmed, and diverse internal quality assurance systems should be constructed [9]. Higher education institutions should take major tasks such as talent cultivation program revision, professional accreditation, and teaching evaluation as focal points to establish a teaching quality evaluation system based on professional teaching and centered on student development, continuously improving the effectiveness of internal quality assurance systems. The student-centered, outcome-oriented approach should be practiced, with sustained tracking and evaluation of student learning outcomes as the focus of quality evaluation. Evaluation indicators and scales based on Chinese student experiences should be developed and refined to comprehensively and objectively present the effectiveness of talent cultivation in higher education institutions. Third, a quality culture with institutional characteristics should be cultivated. Cadres, faculty, and students in higher education institutions should be encouraged to build consensus on development, form synergy for reform, and, in the process of fulfilling the basic functions of talent cultivation, scientific research, social service, and cultural heritage and innovation, focus on reflection and sublimation to form quality cultural connotations with institutional characteristics.

3.2 Promoting Learning Transformation through Online-Offline Integration

The deep integration of information technology with education and teaching is a new challenge facing higher education in the new era. Information technologies represented by the Internet, big data, artificial intelligence, virtual reality, augmented reality, and blockchain have transformed the channels and methods through which people acquire knowledge, leading to the transformation of university faculty roles and changes in teacher-student relationships. These developments challenge universities' educational and operational concepts, teaching organization forms and classroom layouts, teaching and learning methods, as well as teaching management systems and operational mechanisms [10]. Higher education institutions must maintain a keen perspective, closely track development trends, and actively engage in diverse explorations.

First, online teaching should be developed to expand the coverage of high-quality higher education teaching resources. Infrastructure construction should be improved, the advantages of online teaching should be leveraged, and the co-construction and sharing of high-quality teaching resources should be promoted,

particularly to assist higher education institutions in the central and western regions in improving their teaching quality. Second, the quality of online teaching should be enhanced, and the integration of online and offline teaching should be explored. Online teaching differs substantially from traditional classroom teaching. How to achieve teacher-student and student-student interaction in online teaching—exploring telepresence classrooms; how to realize deep integration of online and offline teaching to construct a new normal of blended teaching in the post-pandemic era; and how to strengthen online teaching quality monitoring and explore the quality evaluation of new teaching methods—all require strengthened policy guidance to encourage teachers to engage in practical exploration. Third, the information literacy of faculty and students should be improved, and information-based teaching capacity building should be strengthened. In line with the development trends of science, technology, and teaching reform, school-based training and other means should be used to effectively enhance the information literacy of university faculty and students. At the same time, attention should be paid to improving teachers' interdisciplinary and curriculum integration capabilities, using information technology tools to carry out interdisciplinary comprehensive teaching and explore cross-disciplinary talent cultivation. Fourth, the advantages of information data should be leveraged to strengthen the tracking and evaluation of faculty, student, and institutional development. The supporting role of advanced information technologies such as big data and artificial intelligence should be utilized to achieve effective monitoring and prediction of educational and teaching activities, promoting scientific teaching decision-making, refined teaching management, and personalized student learning. Fifth, attention should be paid to the governance of online higher education. The proliferation of information technology will affect educational decision-making and governance, and online public opinion will affect the authority and credibility of the government as well as the social reputation of universities, bringing significant external challenges to university governance. The guiding role of public opinion should be emphasized, cybersecurity management should be strengthened, a social risk assessment mechanism for major educational decisions should be established, social concerns should be actively addressed, and the capacity to respond to social risks and public opinion issues should be improved.

3.3 Facilitating Integrated Development of Vocational and General Education

From a structural perspective, the future development of higher education should, on one hand, emphasize undergraduate education, implementing comprehensive actions to revitalize undergraduate education and fully improve the quality of higher education. On the other hand, attention should be paid to cultivating high-level innovative talents, reforming talent cultivation models, and improving the quality of graduate education [11]. At the same time, and more importantly, the integrated development of vocational and general education should be explored [12]. This requires both vigorously developing professional degree graduate education and cultivating high-quality applied, technical, and skilled talents at the undergraduate and associate-degree levels to meet social needs. The issue of degree demands arising from the development of higher vocational education should be properly addressed.

First, building on practical explorations in some provinces, pilot programs for associate degree reform should be expanded to provide Chinese experience for the revision of relevant academic degree regulations. A four-tier degree system of associate, bachelor's, master's, and doctoral degrees should be established in due course. Second, the classified cultivation of academic and professional degree graduate students should be improved. The integration of science and education in academic degree graduate education and the articulation of bachelor's–master's–doctoral programs should be actively explored. The cultivation of professional degree graduate students through university-enterprise cooperation and industry-education integration should be vigorously promoted. The degree demands of vocational education can be incorporated into the existing professional degree system for comprehensive consideration, improving the complete education system for vocational education from the associate to the doctoral level, ensuring a smooth path for associate-level education to develop upward, and promoting coordinated and integrated

development between higher vocational education and general higher education. Third, a new degree quality evaluation platform should be improved, categorizing evaluation experts into academic degree or professional degree types for registration and management. Experts from industries and enterprises meeting review qualifications should be included in the professional degree review expert database, further improving the professional degree review indicator system that distinguishes it from academic degrees.

3.4 Optimizing the Higher Education Governance System

Implementing the new era education evaluation reform plan, guiding universities to better coordinate their relationships with society and government, optimizing internal university governance structures, thereby addressing issues of unsmooth university-government relations, uncoordinated university-society relations, and unbalanced internal governance structures [13], and promoting connotation construction and sustainable development are important tasks for China's higher education governance reform in the coming years.

In the new era, higher education evaluation should leverage the leading role of government authorities, implement the main responsibility of schools, encourage diversified participation, and advance the modernization of the education governance system and governance capacity [14]. Specifically: First, educational supervision departments should fully exert their leading role in new-era education evaluation, ensuring the correct direction of educational reform, development, and institutional operation. Second, the principal role of schools in running education should be further strengthened. The authority over resource allocation, fund utilization, and evaluation management should be delegated to schools, effectively implementing and gradually expanding university autonomy, stimulating institutional vitality, promoting the construction of internal quality monitoring and assurance systems, and establishing and improving modern school systems characterized by autonomous development and self-discipline in accordance with the law. Third, the participation of professional institutions and social organizations should be encouraged and guided to enhance the professional and scientific level of educational evaluation. Government transparency, democratic management, and accountability systems should be improved, and the optimization of the education governance system and the enhancement of governance capacity should be promoted.

In summary, the focus of constructing the higher education governance system remains on improving government macro-management, perfecting university leadership systems, optimizing university organizational structures, ensuring democratic management in universities, balancing academic and administrative powers, deepening management operational mechanism reform, and creating an excellent campus culture and educational environment.

3.5 Enhancing the Internationalization Level of Higher Education

The new development paradigm is not a closed domestic cycle but an open domestic-international dual circulation. It requires high-level opening-up, creating a new situation of mutually beneficial cooperation, and forming a new pattern of opening-up. This demands that, in light of new changes in domestic and international circumstances, we continue to solidly advance the internationalization of higher education.

First, new forms of international educational exchange and cooperation should be explored, and new areas of such cooperation should be expanded. Emerging international educational cooperation projects should be actively developed. Education authorities and universities should strengthen policy guidance, jointly develop cooperation projects with foreign partner universities, evaluate implementation outcomes, and summarize relevant experiences. Second, the advantages of information technology should be leveraged to proactively explore internationalization at home in higher education. Attention should be paid to the physical disruption of international faculty and student mobility caused by the COVID-19 pandemic as well as new changes in international relations. Based on local and institutional conditions, the international and cross-cultural literacy of all students should be enhanced, and a new pattern of educational internationalization should be explored and formed. Internet and mobile communication technologies should be fully utilized to facilitate the effective implementation of academic

lectures, short-term courses, and international forums without cross-border personnel mobility. High-quality foreign curriculum resources should be introduced to serve the talent cultivation and internationalization strategies of Chinese universities. Third, the quality of education for international students in China should be improved. Admission standards for international students should be refined, and the curriculum and management systems for international education in China should be optimized. The institutional advantages should be leveraged to continuously improve the level and effectiveness of educational internationalization.

4. Conclusion

This study has systematically examined the gap between China's numerical achievement of higher education popularization and the substantive, connotative transformation that the concept entails. Through the application of Martin Trow's multi-dimensional framework, the analysis demonstrates that while China crossed the 50% GER threshold in 2019, the country's higher education system remains in an intermediate state between massification and genuine popularization across most qualitative dimensions.

The findings across eight analytical dimensions reveal notable disparities. In terms of institutional function, China's higher education continues to prioritize elite cultivation rather than preparing the broader population for a rapidly changing society. Pedagogically, teaching methods remain predominantly lecture-based, with limited adoption of the flexible, technology-mediated approaches characteristic of popularized systems. Institutional diversity and permeability of boundaries between institutions and society remain underdeveloped. Furthermore, governance structures, academic standards, and selection mechanisms still largely reflect the logic of mass higher education rather than the inclusive, value-added orientation of popularization.

To bridge this gap, five interconnected strategic measures have been proposed: the establishment of a categorized quality assurance system, the promotion of integrated online-offline learning, the convergence of vocational and general education pathways, the optimization of governance structures, and the enhancement of international engagement. These measures collectively aim to shift the developmental paradigm from quantitative expansion to qualitative transformation.

It is important to recognize that the transition from mass to popularized higher education is neither linear nor uniform. Different institutional types, regions, and sectors of the system may advance at different rates, and elements of earlier developmental stages naturally persist alongside emerging features of the new stage. The ultimate goal is not merely to achieve numerical benchmarks but to realize a profound transformation in the nature, quality, and accessibility of higher education that truly serves the needs of a modern, knowledge-based society. Future research should continue to monitor these developments empirically and refine the conceptual tools for understanding higher education transformation in the Chinese context.

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