Exploring Pathways to Scientific Higher Education Research: Social Science Methodology and Empirical Science

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Abstract: Developing higher education studies as a discipline with greater scientific rigor is an essential path for advancing higher education research. Amidst the coexistence of crises and complexities in China's higher education research, the field urgently requires reform and innovation based on its unique characteristics. The application of social science methodology and empirical science will serve as pathways to enhance the scientific rigor of higher education research.
***Keywords*:** higher education research; scientific advancement; social science methodology; empirical science

1. Introduction

Since the inception of educational research, scholars have consciously or unconsciously sought norms for the discipline itself. [1]China's higher education research has developed rapidly since the reform and opening-up, yielding abundant achievements. However, compared with international standards, there remains a certain gap. Addressing this issue, Mr. Wang Yongquan once stated: I believe that to achieve this, we must vigorously develop educational science, conduct research in an organized and systematic manner, explore and grasp the laws governing educational development, and ensure that our policies, plans, and measures are grounded in a scientific foundation consistent with these principles." [2]Today, China's higher education research has entered a new phase, yet it must remain faithful to Mr. Wang's vision. Enhancing the standardization and scientific rigor of research remains an imperative task that the higher education research community cannot overlook.

2. The Crisis and Scientificization of Higher Education Research

Looking back at history, research on higher education in China has spanned over a century. With the advent of reform and opening-up, both the research teams and institutions dedicated to higher education have expanded, leading to a gradual flourishing of higher education research. Throughout this journey, despite the continuous emergence of research papers, monographs, and other scholarly works, the field still faces crises of low-quality outcomes and insufficient knowledge accumulation. Moreover, the higher education community has long been embroiled in debates between "disciplinary theory" and "field theory," while the discipline itself grapples with dual crises of institutionalization and survival. [3]On the path toward scientific rigor, higher education studies, like its parent discipline of education, has progressed slowly while enduring constant scrutiny. Faced with these challenges, how higher education research can break through the impasse and turn crisis into opportunity is a critical issue the discipline must address. The author argues that enhancing methodological awareness and striving to strengthen the scientific rigor of higher education research — aligning it with the methodological norms of educational science and social science research — is an inevitable choice.

The birth of pedagogy was a tortuous process, and its advancement toward scientific rigor has been exceedingly slow. For pedagogy to establish its own independent research domain, methodologies, and conceptual framework, it must achieve scientific consolidation. Compared to other social sciences, higher education research exhibits extreme complexity. On one hand, higher education is typically associated with advanced knowledge and scholarship, intertwined with politics, economics, and culture, making it a highly complex educational endeavor. On the other hand, while research outcomes in traditional natural sciences can ultimately be verified through empirical observation, theoretical findings in higher education research lack such measurability. However, the complexity and uncertainty inherent in higher education should not deter the pursuit of scientific rigor in its study. As an integral part of the social sciences, higher education research must embody scientific principles.

Regarding the interpretation and definition of scientific rigor in educational research, humanists contend that the scientific nature of pedagogy can only be demonstrated by enhancing its understanding of education's real and potential worlds, along with the rationality and optimality of its research. They argue that attempting to explain education through singular models or laws is flawed. Scientism advocates, conversely, often insist that educational research should align more closely with natural

science research, pursuing "precision" and broader applicability. As our understanding of educational phenomena deepens, we recognize that rigid adherence to either scientism or humanism is unrealistic for educational research. The complexity of higher education activities further dictates that relying solely on a single perspective or standard to achieve scientific rigor is impossible. Therefore, the fundamental path to scientific higher education research lies in identifying the discipline's inherent particularities and strategically enhancing the scientific rigor of systematic versus partial research, or holistic versus individual studies.

3. Approaches to Scientific Research in Higher Education

To enhance the visibility of higher education research and enable it to compete with Western academic circles in this field, it is imperative to undertake a scientific transformation of China's higher education system. The author believes two approaches should be considered. First, adopting a macro perspective from the social sciences and employing social science methodologies to understand and interpret higher education. Second, strengthening the application of empirical scientific methods in higher education research.

Social sciences serve as the overarching framework for higher education studies and pedagogy. If higher education is regarded as a distinct field, it operates within the broader sphere of social activities. Consequently, incorporating social science methodologies into higher education research is crucial for upholding disciplinary standards within the social sciences — these methodologies inherently constitute the research methodology for higher education studies. Social activities encompass higher education activities. As human society continues to develop, universities increasingly become centers for the advancement of human knowledge and technology. Higher education activities are neither natural phenomena nor abstract mental sciences. Based on the subject of study, higher education research falls under the category of social science research.

There is sound reasoning behind the assertion that strengthening the application of empirical scientific methods can advance the scientific rigor of higher education research. Scholars have analyzed the methodological practices in China's higher education research, categorizing approaches into two main types based on researchers' methodologies and modes of thinking: qualitative and speculative methods versus quantitative and empirical methods. After conducting statistical analyses on a selection of major papers in higher education research, they identified a pronounced tendency in Chinese higher education research to "prioritize speculation over empirical evidence." This tendency undoubtedly requires change in China's higher education research. In outlining the rational requirements for research design, the aforementioned scholars also emphasized the value of quantitative and empirical methods in higher education research, viewing this as a crucial pathway to enhance the scientific rigor of the field. [4]Historically, the decade following the Third Plenary Session of the 11th Central Committee witnessed a major methodological transformation in China's educational research. Educational thinkers such as Ye Lan, Chen Guisheng, and Qu Baokui, in discussing the evolution of research methods during this period, recognized the strengthening of empirical tendencies as a crucial step toward the scientific advancement of China's educational research methodology. [5]It follows that the process of empiricism and quantification in higher education research is synonymous with the advancement of scientific rigor in this field.

4. Social Science Methodology and Higher Education Research

Since the emergence of higher education studies as an independent discipline, research on methodologies for higher education studies has persisted in China. With the continuous accumulation of research findings, perspectives on higher education research methods can be summarized into two main viewpoints: the "unique methodology theory" and the "no unique methodology theory."[6]Within the "Disciplinary Methodological Levels" framework of the "Unique Methodology" perspective, proponents argue that above the level of higher education research methods lies a universal, broadly applicable methodology. This higher-level methodology can guide higher education research, with social science methodologies falling into this category. Marxist philosophy occupies the highest tier within this disciplinary hierarchy. Social science methodologies guided by Marxist philosophy — such as systematic research approaches, contradiction analysis, and truth-value analysis — constitute universally applicable frameworks within China's social sciences. These serve as scientific methods for analyzing higher education phenomena and interpreting educational activities. Strict adherence to the fundamental tenets of Marxism and the proper application of methodologies guided by Marxist philosophy will significantly enhance the scientific rigor of higher education research at the macro level.

In terms of historical development, sociology is the youngest among the social sciences, humanities, and natural sciences. This has led sociology to adopt scientific standards from other disciplines during its evolution, with fields like physics and biology exerting profound influences on sociological thought. Experimental pedagogy exemplifies this influence

within education. However, experimental pedagogy is no longer mainstream in educational research. Simply pursuing research paradigms from natural sciences like physics does not necessarily advance the scientific rigor of pedagogy. In fact, social sciences differ markedly from natural sciences, humanities, and cognitive sciences in disciplinary nature and research subjects. Transplanting research methods from one scientific domain to another is unrealistic. Although Émile Durkheim, one of sociology's founders, advocated treating social facts as objects of study, his principles for interpreting social phenomena, classifying social types, and verifying findings diverged significantly from physics.[7]In short, sociology possesses unique epistemological characteristics and disciplinary foundations, necessitating distinctive social science methodologies to guide related fields such as pedagogy. Therefore, mastering scientific methodology — the traditional weapon of the social science family — enables higher education research to firmly advance within the realm of social science.

5. Empirical Science and Higher Education Research

Amidst the wave of educational reform, numerous scholars have criticized the scientistic tendencies in educational research, drawing upon the humanistic characteristics of education. However, the scientific orientation within China's educational sphere hardly qualifies as a full-fledged "ism." Moreover, the scientism adopted by Chinese commentators corresponds to what is labeled as positivism in the West. Empiricism is not synonymous with scientism, and constructivism — the dominant ideology in education — does not represent empiricism either. Empirical research remains an urgent necessity for China's social sciences.

In practice, China's higher education research not only exhibits a tendency to prioritize speculation over empirical evidence in major papers, but also demonstrates a disregard for empirical and quantitative research within comprehensive educational academic achievements. One scholar analyzed data from four highly influential comprehensive academic journals in China over a three-year period. The findings revealed that quantitative research constituted a very small proportion, far below qualitative research — especially speculative research. This decline in quantitative research is also evident in the research types of nationally outstanding doctoral dissertations (in education).[8] It is important to recognize that quantitative research is a defining characteristic of empirical scientific inquiry. While the comprehensive and complex nature of higher education activities may increase the difficulty of quantitative operations and measurement, the scientific standing of quantitative and empirical research in higher education studies should not be undermined by operational challenges. Quantitative research offers logical rigor and data transparency, and its findings possess significantly greater generalizability compared to speculative research. Historically, the application and proliferation of quantitative research revitalized the social sciences. It conferred new prestige and influence upon these disciplines, rendering observation indispensable in any study of higher education phenomena. Quantitative data and empirical analysis provide the most compelling interpretation of observational findings.

Emphasizing empirical research does not mean abandoning theoretical inquiry. Theoretical achievements and empirical conclusions in higher education research complement each other in establishing a scientific research framework. On one hand, the complexity of higher education creates deceptive phenomena. Here, empirical research must dialectically eliminate "false appearances" under theoretical guidance to scientifically analyze actual educational facts. On the other hand, theoretical research should construct action strategies and theoretical frameworks that are both lawful and purposeful based on reality. It should then utilize the conclusions of empirical research to validate or falsify its own strategies and theories, ultimately achieving continuous renewal and advancement of both theory and research.

Scholars have reached a consensus that empirical scientific methods are universally applicable to natural sciences and social sciences, including educational science. [9]Given the current absence of rigorous research standards and the unclear methodological foundations in China's higher education research field, strengthening the application of social science methodology and empirical science in higher education research will inevitably significantly enhance the scientific rigor of such research. With a reasonable scientific approach and through persistent effort, China will undoubtedly establish a well-trained and continuously innovative higher education research team, transforming higher education studies into an indisputably scientific discipline.

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