Original Paper

Research on the Construction of a Long-term Mechanism for Graduate Academic Integrity Based on Embeddedness Theory

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Abstract

Integrity serves as the core value in the construction of graduate academic atmosphere and scientific research work, playing a pivotal role in shaping a favorable academic environment, promoting the healthy development of scientific research, and constructing a modernized higher education system. The construction of a long-term mechanism for graduate academic integrity should be grounded in the theory of embedded integrity, exploring China's modernized long-term mechanism for graduate academic integrity through reforms in academic integrity culture mechanisms, upgrades in collaborative governance mechanisms for academic integrity, and strengthening of academic integrity supervision mechanisms.

Keywords

Academic Integrity, Academic Misconduct, Embeddedness Theory, Long-term Mechanism

1. Introduction

Graduate education, as a crucial component of China's higher education, is an important arena for cultivating high-quality talents. The construction of an academic integrity mechanism, as an integral part of graduate education, is pivotal to the spiritual development, habit formation, and career progression of graduates, as well as to the development and transformation of China's modernized education system. From the "Zhai Tianlin academic scandal" (The Academic Scandal of Zhai Tianlin, 2019) in 2019 to the withdrawal of Jonathan Pruitt's Nature article due to data issues in 2023 (The First Nature Article of 2023 Was Retracted Due to Suspected Data Fraud!, 2023), and the adjudication of China's first AIGC copyright dispute case (The Judgment on the First Case Where AI-Generated Images from Simple Prompts Do Not Constitute a Work Takes Effect!, n.d.), it is evident that China's graduate academic integrity mechanism is continuously evolving. However, academic misconduct issues still persist. Therefore, integrating the concept of academic integrity throughout the entire

process of graduate education, applying academic integrity systems comprehensively in graduate education, and achieving full coverage of academic integrity supervision in graduate education are essential paths for constructing a long-term mechanism for graduate academic integrity.

2. Method on the Construction of a Long-term Mechanism for Graduate Academic Integrity

The term "embeddedness" first appeared in Karl Polanyi's book "The Great Transformation" in 1944. As a significant breakthrough in methodology, embeddedness theory provides a new theoretical perspective for social science research. With in-depth research by scholars, various analytical frameworks such as relational embeddedness, structural embeddedness, cultural embeddedness, political embeddedness, and technological embeddedness have emerged.Integrity, as an important component of China's socialist core values, is not only a treasure of Chinese culture but also a moral code that individuals engaging in social interactions should adhere to. "Academic integrity" refers to researchers seeking "truth" and "innovation" in academic research, upholding credibility and morality, strictly adhering to academic norms, and respecting the academic achievements of others. (Chen, 2017) Therefore, this paper adopts the perspective of embedded integrity theory, combines questionnaire surveys and offline interviews conducted at J-University, analyzes the current status and issues of academic integrity mechanisms for graduate students at universities, explores methods and measures for transforming embedded integrity theory into academic integrity mechanisms, and contributes to the construction of a long-term mechanism for graduate academic integrity.

3. Current Status Analysis of Graduate Academic Misconduct and Integrity Issues

The "Report on China's Anti-Corruption and Clean Governance Construction (No.9)" includes a special study on "academic misconduct issues and research integrity construction since 2018," explicitly stating that based on the consensus of the domestic and international academic communities, there are nearly 10 types of academic misconduct, with plagiarism and forgery always being the main forms. (Research Group of the China Anti-Corruption Research Center, 2020). In recent years, phenomena violating academic integrity in the academic community have mainly manifested as plagiarism in theses and works, forgery of academic achievements, and duplication of academic research results. Therefore, this paper selects graduate students from J-University as the research subjects, randomly sampling 500 master's and doctoral students from the School of Automotive Engineering, School of Materials Science, School of Energy and Power Engineering, School of Medicine, School of Law, School of Teacher Education, School of Business, and School of Art, spanning from first-year master's students to third-year doctoral students. Online questionnaires were distributed, and 469 were returned. Based on the questionnaire survey results regarding the academic literacy and integrity of graduate students at J-University, overall, students' academic integrity awareness, norms, and measures urgently need strengthening. Academic integrity issues are mainly reflected in the following aspects.

(1) Inadequate Implementation of Academic Integrity Education for Graduate Students: From the survey results, respondents have a vague understanding of the connection and difference between academic integrity and academic norms. Academic integrity education for graduate students is intermittent, with different levels of cognitive awareness among doctoral and master's students. Over half of the respondents (57.8%) believe that academic integrity is equivalent to academic norms (80% of whom are lower-year master's students), and nearly a quarter of the respondents (24.5%) believe that academic integrity issues are not directly related to academic misconduct.

(2) Lack of a Strong Academic Integrity Environment and Atmosphere on Campus: Respondents have a clear understanding of cases and scenarios violating academic ethics, but over half of the respondents (52.38%) believe that their institutions' emphasis on academic ethics construction and academic atmosphere building for graduate students is moderate, and nearly a fifth of the students (19.05%) believe that their institutions do not prioritize academic ethics construction.

(3) Slow Development of Academic Integrity Supervision and Relief Systems for Graduate Students: Nearly half of the respondents (47.62%) believe that the investigation and punishment norms for academic misconduct and unethical behavior among graduate students in China are not stringent enough. Faced with academic misconduct, 23.81% of the respondents merely discuss it as a topic of conversation without taking action, and even 4.76% of the students do not care at all about the existence of academic misconduct.

4. Causal Analysis of Graduate Academic Misconduct and Integrity Issues

The frequent occurrence of academic misconduct among graduate students has certain inducements. "It is necessary to pay attention not only to individual behaviors but also to external factors affecting them, such as academic rewards, incentives, and pressures." (KRETSER, 2019) Based on the questionnaire survey at J-University, the reasons leading to academic misconduct and integrity issues can be summarized into three major factors: subject factors, environmental factors, and institutional factors.

4.1 Weak Academic Integrity Awareness Among Subjects and Insufficient Penetration of Academic Integrity Education

Graduate students at universities have a vague understanding of basic concepts such as academic norms, academic integrity, and academic misconduct. Many students find it difficult to define the relationship between academic ethics and academic norms, and some even believe that the two concepts are essentially the same. Currently, graduate students' knowledge of academic integrity is insufficient, and they lack reverence for academic integrity and scientific research behavior, failing to internalize academic integrity awareness into their hearts and externalize it into actions. This is an important trigger for the inability to eradicate academic misconduct issues.

Regarding the current status of academic integrity education for graduate students, the phrase "important in words, secondary in actions, and negligible when busy" aptly describes the situation. In the questionnaire survey at J-University, some students hold a negative attitude towards the addition of

a "special course on academic integrity behavior norms education" to graduate students' required courses, believing that it serves no practical purpose. This reflects that the specific work of academic integrity education for graduate students has not been fully implemented. When universities promote academic integrity education activities,promotional lectures, college official accounts, and exhibitions are the main carriers of academic integrity education, with written content being the primary method. The lack of effective educational methods and strong guarantee mechanisms makes it difficult to mobilize students' enthusiasm and initiative in participating in academic integrity education, let alone achieve the goal of embedding integrity into graduate education. This also leads to students' lack of systematic learning and mastery of academic integrity and norms, making them prone to academic misconduct in their scientific research lives.

In response to the question "Is it necessary to assess candidates' academic integrity and norms during the graduate admissions process," 14.29% of the students believe that it is not necessary. In response to the question "Is it necessary to evaluate and identify a student's compliance with academic integrity and norms during the graduate graduation assessment," 61.9% of the respondents hold a moderate attitude. Overall, the relationship between graduate education, undergraduate education, and subsequent employment is relatively fragmented, with each life stage being relatively independent. Academic integrity education for graduate students is only a part of graduate education life rather than being fully "embedded" throughout the entire process of life, leading to students' fatigue in self-supervision and a sense of complacency in not being able to identify academic misconduct. These thoughts and approaches neither increase the cost of committing academic integrity issues nor ensure the long-term effectiveness and sustainability of academic integrity construction, making academic misconduct issues increasingly difficult to eradicate.

4.2 Utilitarian Academic Environment and Overly Quantified Academic Evaluation Inducing Academic Integrity Issues

Combining the questionnaire survey at J-University, when answering the question "What are the main reasons leading to academic integrity issues and misconduct among graduate students," 79.2% of the respondents believe that it is due to "unreasonable award and excellence evaluation mechanisms and degree granting requirements" and "the influence of unfavorable social academic trends." According to data, the number of master's and doctoral students enrolled nationwide in 2024 was 1.1857 million and 171,100 respectively, an annual increase that provides more learning opportunities for students but also brings more intense social competition pressure.(Ministry of Education,2025) The increasingly severe academic atmosphere of intense competition is both a product of utilitarianism and a "hidden promoter" of frequent academic misconduct issues.

"China's society is still in a transition period, with 'utilitarianism,' 'money worship', and other unfavorable trends rampant. In the academic community, these trends are manifested as academic fraud and corruption... There are widespread phenomena of 'favor-giving' in mutual authorship of papers, 'presenting' papers to leaders, etc. The 'gray income' in scientific research has even created a 'gray

industrial chain' of academic fraud, paper ghostwriting, and priority publication." (Haibin et al., 2018). Such unfavorable academic environments make many graduate students lack the ability to discern and lose their original academic pursuit, even becoming members of the gray industrial chain.

Meanwhile, the current evaluation of graduate education places more emphasis on "quantified evaluation" indicators, which are closely linked to students' immediate interests. For example, the number and quality of published papers are directly linked to students' scholarship grades. Academic-type master's students are required to complete an additional journal paper besides their thesis to meet graduation requirements, and some institutions even explicitly state that the paper must be published in a core journal. Under the increasing pressure of graduation requirements, the drive for awards and excellence, and the pursuit of further academic studies, some graduate students may feel the need to engage in academic fraud, choosing academic misconduct such as paper ghostwriting and fraud to obtain personal benefits. This not only gradually erodes graduate students' awareness of academic integrity and perception of scientific research integrity but also plants the seeds of academic misconduct.

4.3 Insufficient Academic Integrity Supervision Co-governance Capabilities and Weak Supervision
Currently, the main supervisory bodies for graduate academic integrity are concentrated within universities. The power of individual supervision and social supervision is weak, and the construction of academic integrity supervision mechanisms lacks macro-perspective and overall-perspective, failing to form a co-governance situation for academic integrity with diversified supervisory bodies.

Faced with academic misconduct issues, universities adhere to the notion of "not airing family dirty laundry," and their handling is mostly confined within the campus, mainly through disciplinary warnings, probation, etc., without forming a supervisory joint-force with external supervisory bodies such as other universities, social media, and scientific research institutions. Fragmented supervisory bodies and supervisory content cannot ensure comprehensive control over academic integrity, and the unilateral supervisory measures and punishment measures within universities lack deterrence for graduate students. Meanwhile, the supervision and punishment of academic misconduct require time and evidence. From identifying misconduct to specific verification and final punishment announcements, a long cycle is needed. However, the operability of this cycle to some extent encourages the complacency of academic misconduct, leading to more possibilities for many deliberate academic integrity issues to evade punishment.

In addition, with the continuous development of the big data era and the upgrading of generative artificial intelligence technologies, significant challenges have been posed to academic integrity supervision mechanisms. Currently, the supervision of academic integrity for graduation theses mainly relies on multiple links such as "self-supervision-platform plagiarism detection-external review assessment," while the supervision of academic integrity for research papers mainly focuses on platform plagiarism detection. With the upgrading of generative artificial intelligence platforms and technologies, the AIGC plagiarism detection rate has not yet been incorporated into the paper

plagiarism detection system, making it difficult to supervise the accuracy, consistency, and completeness of articles.

5. Optimization Paths for the Construction of a Long-term Mechanism for Graduate Academic Integrity

The construction of academic integrity for graduate students involves cultivating students' personal qualities, affecting the construction of teaching quality and regulatory systems in universities, and influencing the construction of academic atmosphere in the education system and the implementation of social integrity cultural environments. Therefore, it is necessary to embed academic integrity throughout the entire process of graduate education to safeguard the development of modernized university education through the construction of a long-term mechanism for graduate academic integrity.

5.1 Deepen the Embedding of Academic Integrity Culture Education and Explore a Localized Academic Honor System

Integrity is the foundation of life and a traditional virtue of the Chinese nation. In the process of constructing a long-term mechanism for graduate academic integrity, "it is necessary to consider 'embeddedness', recognize the vitality of traditions, and avoid 'detachment from reality' in innovative reforms" (Heng et al., 2020). For universities, each institution can formulate academic norm documents suitable for itself based on national academic integrity norm standards and its own characteristics, effectively conveying academic integrity knowledge to students through academic lectures, norm manuals, college briefings, network official accounts, etc., so that graduate students can gradually establish academic integrity awareness and practice academic integrity actions. Additionally, graduate student organizations, class committees, Communist Youth League organizations, etc., can consolidate academic integrity awareness and create an academic integrity atmosphere through flexible and interesting activities such as class meetings, academic exchange meetings, and Communist Youth League activities. Meanwhile, universities must further implement academic integrity courses as core courses, considering the characteristics of graduate students' majors, grades, and directions, designing different teaching methods, assessment standards, and evaluation systems for academic integrity courses based on departments and schools, and emphasizing the integration of knowledge and action.

The major cause of frequent and difficult-to-treat academic misconduct issues lies in the "involution" of academic atmosphere and the "deformed" academic evaluation indicators.Therefore, based on the concept of China's modernized higher education, it is necessary to explore modernized academic evaluation indicators and develop localized academic honor mechanisms. Universities, as the main practitioners, must further clarify the differences in cultivation methods between academic-type master's students and professional-type master's students, considering the proportion of theses versus practice in the final graduation evaluation.Of course, it is also necessary to strengthen the linkage between quantified evaluation and peer review mechanisms, distinguish evaluation and excellence

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standards for different majors and grades, reasonably allocate the personnel ratios for national scholarships, enterprise scholarships, etc., comprehensively consider the roles of scientific research capabilities, academic integrity, personal morality, etc., achieve a balance between horizontal evaluation of scientific research achievements and vertical evaluation of academic integrity, break away from the evaluation standard dominated by academic scientific research achievements, and avoid generating utilitarian behaviors due to overly quantified scientific research evaluation standards that induce academic misconduct.

5.2 Strengthen the Embedding of Academic Integrity Organizations and Innovate Diversified Methods for University Integrity Governance

The goal of modernizing the governance system and governance capabilities for graduate education is to form a new pattern of "government macro-regulation, school autonomous operation, and extensive social participation." (Hongqi et al. 2014). As a key component of the graduate education governance system, the construction of academic integrity for graduate students serves as an important support for implementing academic integrity construction. Universities must further strengthen the construction of their own academic integrity organizations, establish and improve academic integrity committees at the school and college levels, and form academic integrity committees composed of teacher and student representatives through recommendations, evaluations, public announcements, and probationary periods to strengthen the implementation and supervision of academic integrity behaviors.

Meanwhile, universities must further strengthen the embedding of academic associations, academic journal editorial departments, and other social organizations into the long-term mechanism construction of university academic integrity, strengthen the embedding of "mentors and friends" academic ethics organizations, and gradually form a multi-level academic integrity organization system of "students-colleges-universities-society" through the embedding of different subjects and organizations.

According to the 55th Statistical Report on China's Internet Development Status released by CNNIC, the related industries of generative artificial intelligence have developed rapidly in 2024, with new business forms and applications continuing to emerge. As of December 2024, among generative artificial intelligence users in China, the most widespread users utilize generative artificial intelligence products to answer questions, accounting for 77.6%; users utilizing generative artificial intelligence products as office assistants account for 45.5%. (China Internet Network Information Center. The 55th "Statistical Report on Internet Development in China, 2025) Therefore, the continuously developing generative artificial intelligence technologies and platforms can serve as components of diversified university integrity governance methods. That is, the construction of a long-term mechanism for graduate academic integrity can realize the integration of education, management, supervision, feedback, and governance of graduate academic integrity by building an intelligent platform for the co-construction, sharing, and co-governance of academic integrity. For example, promoting the construction of an "academic integrity think tank," establishing an intelligent archive for graduate academic integrity, achieving full coverage of academic integrity for graduate students from

pre-enrollment to post-graduation, strengthening feedback and supervision during different periods, and gradually building an intelligent system for graduate academic integrity.

5.3 Improve the Embedding of Academic Integrity Supervision Systems and Strengthen the Institutional Construction of Academic Integrity

Compared with other countries, China's identification and governance of academic misconduct started relatively late, and the legal protection and judicial regulation construction for intellectual property rights are not perfect. In actual operations, there are issues of "soft" promotion efforts, "scattered" focus points, and "empty" content. (Guo, 2017) Therefore, it is necessary to strengthen the embedding of academic integrity supervision systems and continuously improve the institutional construction of a long-term mechanism for academic integrity.

For universities internally, university libraries, academic supervision committees, and university presses must strengthen collaboration to comprehensively monitor graduate students' academic and scientific research from education, supervision, and review perspectives, avoiding integrity deviations and academic misconduct during the scientific research process. Meanwhile, universities can gradually construct a multi-level circular supervision system of "school-college-mentor-student," broaden the supervision channels for academic integrity through network intelligent supervision platforms, accept reports of academic misconduct from various parties, pay attention to the protection of whistleblowers, provide timely feedback and announcements after verifying the reported information, publicly announce academic misconduct through bulletins, enterprise WeChat, official accounts, and intra-school information networks, etc., to deter and warn against such behavior. Additionally, China's prevention and control of academic misconduct mainly rely on the personal morality of scientific researchers. However, relying solely on personal self-regulation of behavior through thoughts is far from enough. It is necessary to strengthen the implementation of academic integrity laws and regulations. Universities must strictly punish academic misconduct and the attitudes of parties involved in accordance with laws and regulations, abandoning the practice of covering up serious academic misconduct issues through warnings, serious warnings, probation, etc., and handling academic misconduct in an objective and serious manner. Meanwhile, strengthening the awareness of the legalization of academic integrity and learning and reflecting on relevant academic integrity cases can continuously enhance the self-discipline of academic integrity in graduate education, shaping good integrity qualities and capabilities for students' future scientific research and lives.

Appendix:

Questionnaire Survey on Academic Quality and Norms Among J-University Graduate Students

Question 1: Are you currently pursuing a master's degree or a doctoral degree?

Question 2: What grade are you currently in?

Question 3: What type of degree are you pursuing?

Question 4: What is your major?

Question 5: How well do you understand academic integrity and academic norms?

Question 6: What do you think is the relationship between academic integrity and academic norms? (Multiple-choice question)

Question 7: How do you acquire knowledge about academic integrity and academic norms? (Multiple-choice question)

Question 8: Which of the following behaviors do you consider as violations of academic ethics? (Multiple-choice question)

Question 9: What would you do if you discovered academic misconduct?

Question 10: Which department do you think should handle violations of academic integrity and academic norms?

Question 11: What measures would you take if your research achievements were plagiarized?

Question 12: What do you think are the harms of academic integrity issues and academic misconduct? (Multiple-choice question)

Question 13: What do you think are the main reasons for academic integrity issues and academic misconduct among graduate students? (Multiple-choice question)

Question 14: What do you think are the main obstacles preventing the exposure of current academic misconduct and academic dishonesty? (Multiple-choice question)

Question 15: Do you think it is necessary to assess candidates' academic integrity and academic norms during the graduate admission process?

Question 16: Do you think it is necessary to evaluate and assess a graduate student's compliance with academic integrity and academic norms during their graduation evaluation?

Question 17: Do you think academic integrity education should be highlighted in the ideological and political education of graduate students?

Question 18: How much importance do you think your institution attaches to graduate students' participation in scientific research activities?

Question 19: How satisfied are you with your institution's efforts to regulate graduate students' academic behavior?

Question 20: Do you agree with the academic norms regulations and violation handling methods formulated by your university or institution?

Question 21: Are you willing to comply with unified academic norms?

Question 22: Do you think it is meaningful to establish awareness of academic integrity and academic norms in the academic community?

Question 23: Do you think it is necessary for universities to offer a course on "Academic Integrity and Academic Norms for Graduate Students"?

Question 24: How do you think the investigation and handling of academic misconduct and academic dishonesty are carried out in China?

Question 25: What do you think are the effective ways to restrict academic misconduct and academic

integrity issues among graduate students at this stage? (Fill-in-the-blank question)

(Note: Questions 1, 2, 3, 4, 5, 9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24 are single-choice questions. Questions 6, 7, 8, 12, and 14 are multiple-choice questions. Question 25 is a fill-in-the-blank question.)

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