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Evolutionary Characteristics and Governance Pathways of Exam Cheating Behavior among Undergraduate Students

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Abstract: This study analyzes 368 cases of undergraduate exam cheating investigated at H University from 2021 to 2025. Using descriptive statistical analysis, the research systematically examines the evolving characteristics of cheating behaviors. The findings indicate a significant rebound in cheating incidents after a temporary decline in the 2022 academic year. In terms of grade distribution, sophomores and juniors represent the highest-risk groups. From a disciplinary perspective, cheating is predominantly concentrated in professional courses, with a significantly higher proportion than in public basic courses. Regarding methods, traditional paper-based materials (cheat sheets) still dominate (approximately 60%), but cheating using electronic devices and proxy exam-taking now account for nearly 30% of cases. Based on these findings, this paper proposes targeted governance strategies focusing on the reform of core professional course assessments, academic pressure counseling for upper-year students, and the implementation of a differentiated proctoring system.

Keywords: Undergraduate Universities; Exam Cheating; Examination Management; Causal Analysis

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1.Introduction

Academic integrity is a crucial institutional foundation for the high-quality development of engineering education [1]. As a key evaluation stage in the engineering talent cultivation system, examinations not only test learning outcomes but also objectively shape students' learning strategies and behavioral choices. In recent years, with the deepening of engineering curricula and rising course difficulty and graduation requirements, undergraduates face significantly increased academic pressure in examination settings. Consequently, exam cheating has become an unavoidable issue in the governance of engineering education.

Existing research has extensively discussed exam cheating from various perspectives, including individual student characteristics, perceptions of integrity, examination system design, and campus management, forming a general consensus around drivers like "academic pressure" and "systemic loopholes" [2]. However, these studies are often based on surveys or macro-statistical data and lack sufficient focus on the structural differences in cheating behavior across different grade levels, course types, and examination contexts. Particularly in local polytechnic universities, cheating behaviors may exhibit characteristics distinct from those at comprehensive or research-intensive universities, influenced by their unique professional structures, engineering course assessment methods, and student development paths. The underlying mechanisms and governance priorities require further investigation through empirical data.

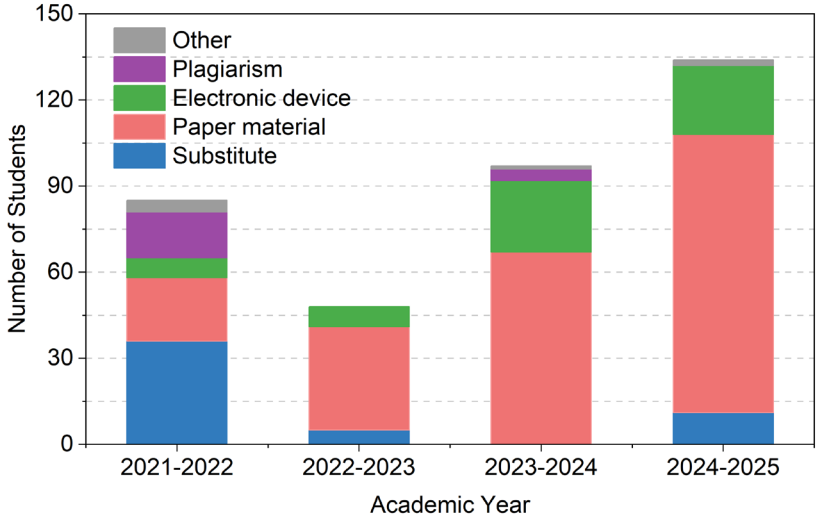
H University, a local undergraduate institution specializing in science and engineering, is representative in its professional settings, curriculum structure, and teaching management models. This paper, therefore, takes 368 cases of undergraduate exam cheating investigated from the fall semester of 2021 to the spring semester of 2025 as its research sample. Combined with survey data, it systematically analyzes the structural characteristics and evolutionary trends of cheating behavior from the dimensions of academic year changes, course types, grade distribution, and examination contexts. This study aims to reveal the phased and context-dependent features of exam cheating in engineering education and, based on this, explore targeted governance pathways to provide empirical evidence for local polytechnic universities to improve their examination management and course assessment systems.

2.Current State of Student Exam Cheating

2.1 Overall Trends and Type Distribution

From the fall semester of 2021 to the spring semester of 2025, H University investigated a total of 368 cases of undergraduate exam cheating. The data were primarily sourced from the university's academic affairs office's disciplinary action archives and supplemented by survey results for verification. As shown in the annual trend (Fig 1), the number of cheaters exhibits a distinct "U-shaped" fluctuation: there were 86 cases in the 2021–2022 academic year, which dropped to 48 in 2022–2023. Subsequently, with the full resumption of in-person centralized exams, the number rapidly rebounded, reaching a peak of 135 in the 2024–2025 academic year. This trend suggests that the problem of exam cheating did not naturally disappear after the full return to in-person assessments for engineering courses. Instead, it experienced a resurgence in specific periods, indicating that relying solely on disciplinary constraints is insufficient for long-term governance. This also confirms the long-term erosive effect of remote examination models on the academic integrity environment in the post-pandemic era.

Fig 1. Trend in the Number and Types of Cheating Incidents (2021–2025 Academic Years)



In terms of cheating methods, traditional paper-based materials (e.g., cheat sheets, notes) remain the dominant method, accounting for approximately 60% of all cases. Cheating with electronic devices ranks second. Although proxy exam-taking has a relatively lower share, its impact on examination fairness is severe and is mainly concentrated in non-standardized tests such as physical fitness tests. Mutual copying accounts for the smallest proportion. Overall, low-tech, traditional cheating methods remain the primary focus for current examination governance.

2.2 Temporal and Spatial Distribution

Exam cheating at H University shows clear concentration patterns. Incidents primarily occur at the end of the semester, with the cheating rate during the fall semester final exams being approximately 17.3% higher than in the spring semester. In terms of timing during an exam, the period between 40 to 70 minutes into the exam is the peak time for cheating, accounting for 61.8% of all cases. The 15 minutes before the exam starts and the 10 minutes before it ends constitute secondary peaks, reflecting impulsive violations by some students under exam pressure.

Spatially, the detection rate of cheating in large lecture halls is significantly higher than in standard classrooms, with average

rates of 3.2% and 1.7%, respectively. Compared to small-class exams (under 45 students), the incidence of cheating in large, combined-class exams (over 70 students) is about 42.5% higher. Furthermore, the cheating rate in public teaching building exam rooms is nearly 30% higher than in dedicated faculty-managed exam rooms. This difference may be related to students' familiarity with the exam environment, proctors' familiarity with individual students, and variations in proctoring resources [3]. These temporal and spatial characteristics are particularly prominent in professional course exams and among sophomore and junior students, further confirming the close link between examination context and misconduct.

2.3 Disciplinary and Grade-Level Differences

In terms of disciplinary distribution, professional courses are a high-risk area for cheating, with 201 cases, accounting for 54.6% of the total. In contrast, the proportion of cheating in public basic courses such as mathematics, physics, and English is relatively low. This result indicates that when exam content is highly correlated with students' professional competency evaluation, graduation requirements, and future employment, the risk of misconduct increases significantly.

From a grade-level perspective, exam cheating is mainly concentrated among juniors (35.9%) and sophomores (32.6%), with these two groups accounting for nearly 70% of the total. Freshmen have a relatively low share (17.9%). This indicates that as students enter the professional course stage, the academic burden increases, course difficulty rises, and sensitivity to exam discipline declines, leading to a clear clustering of misconduct risk at this stage.

3.Causal Analysis of Exam Cheating

3.1 Personal Factors

At the individual level, student cheating can be analyzed from cognitive, emotional, and behavioral dimensions. Cognitively, surveys show that nearly 60% of cheating students have varying degrees of learning deficiencies, manifested as a poor understanding of course content, improper study methods, or a negative attitude towards learning. Additionally, 47.8% of students have significant time management difficulties, making it hard to schedule daily study and review, leading them to cram for exams, which increases the likelihood of cheating.

Emotionally, academic pressure and exam anxiety are key psychological drivers of cheating [4]. Nearly 70% of students reported high levels of academic pressure, which, according to self-assessments, increased by about 20% after the introduction of new professional accreditation evaluations in 2021. Furthermore, about 50% of students experience significant anxiety about exam results, with this anxiety being more pronounced among students with high family expectations. When faced with the potential consequences of poor grades, these students are more inclined to resort to illicit means to avoid risks.

Behaviorally, poor study habits and a lack of self-discipline are also major contributing factors. Data show that nearly 40% of cheating students procrastinate severely, with an average effective study time of less than 3 hours per day; about 30% have a class attendance rate below 80%. Among cheating students, about 60% were significantly underprepared for exams, and 40% lacked a systematic study plan and self-discipline. Moreover, nearly 40% of students admitted to an insufficient understanding of academic integrity norms, failing to fully recognize the seriousness and long-term consequences of cheating.

3.2 Environmental Factors

At the institutional level, exam cheating is closely related to the teaching evaluation system, examination management, and the campus culture of academic integrity. First, the weight of final exams in the overall course grade is generally too high. Statistics show that for about 70% of courses, the final exam accounts for over 60% of the total grade, and for about 30% of courses, this weight is even over 70%. This assessment model, dominated by a single exam, amplifies the importance of the exam result, creating a "single-exam-determines-everything" mentality.

Second, there are still weaknesses in examination organization and management. In large examination halls with more than 70 students, the average proctor-to-student ratio is about 1:25, which is significantly higher than the 1:20 standard recommended by the Ministry of Education, objectively weakening proctoring effectiveness. Additionally, the enforcement of penalties for cheating tends to be lenient. The probation period for cheating students is lifted in nearly 100% of cases after one year, which weakens the deterrent effect of the policy and fosters an expectation that the "cost of misconduct is manageable" [5].

Regarding the campus academic culture, there is a prominent "GPA-centric" value orientation. Surveys show that over 60% of students believe that GPA ranking is more important than actual learning. Intense competition for grades weakens the spirit

of cooperation in learning and encourages a utilitarian approach. Especially after the implementation of new policies for changing majors and awarding scholarships in 2023, the decisive role of grades in students' development paths was further strengthened. About 60% of cheating students admitted that the perceived immediate benefits of cheating outweighed the risks of being caught.

3.3 Social Factors

From a societal perspective, employment pressure and social values have a significant impact on students' examination behavior. On one hand, intensified competition in the job market creates continuous external pressure. Between 2021 and 2025, the average initial employment rate for graduates of H University was below 90%. Nearly 60% of students stated that to enhance their competitiveness in the job market, they had to focus on grades as a core metric, especially as the number of graduates continues to grow.

On the other hand, a utilitarian social outlook has, to some extent, devalued the process of learning. Surveys show that over 60% of students agree that "the result is more important than the process," and over 50% have the cognitive bias that "grades equal ability." The media's focus on high-paying jobs and success stories leads some students to form a one-sided perception that a high GPA is the key to securing a desirable job, thus turning exam scores into a tool and ignoring the importance of academic integrity and the learning process itself.

4.Governance Pathways and Institutional Implications

Given the evolving characteristics of exam cheating at H University in terms of grade distribution, course types, and methods, a purely punitive approach to governance is no longer adequate for the current complex situation. The governance strategy should shift from "plugging leaks at the end" to "addressing the source and controlling the process," building a systematic prevention framework that encompasses course assessment, academic support, and proctoring technology.

4.1 Deepen the Reform of Engineering Course Assessment Models to Mitigate the "Single-Exam-Determines-Everything" Incentive

Given that professional courses have a cheating rate of 54.6% and are mostly concentrated in final exams, the expected gains from cheating must be reduced by reforming assessment methods. First, rebalance the weight of formative assessments. The current situation where final exams account for a disproportionately high percentage (60%-70%) should be changed by increasing the weight of regular assignments, mid-term tests, lab work, and engineering design projects to over 50%. Second, optimize the design of exam questions. For science and engineering courses, reduce the proportion of objective questions that rely on rote memorization and increase the number of open-ended, comprehensive, and application-oriented questions. Such questions, which assess the ability to solve complex engineering problems, have an inherent uncertainty in their standard answers, which technically reduces the feasibility of using cheat sheets or copying [6]. Finally, promote "non-standard answer" exam reforms. Encourage core professional courses to adopt "semi-open-book" or "open-book" exams, allowing students to bring reference materials but focusing on assessing knowledge transfer and application skills, thereby guiding students to shift their energy from "making cheat sheets" to "understanding knowledge."

4.2 Establish a Precision Academic Support Mechanism for Sophomores and Juniors in their "High-Pressure Period"

Data show that sophomores and juniors are high-risk groups for cheating, which is closely related to the high density and difficulty of courses and the concentrated pressure of professional stream selection during this period. First, implement staggered management of academic pressure. The academic affairs office should use big data analysis to rationally plan the density of core courses and exam schedules each semester to avoid concentrating high-difficulty professional courses in a short period. Second, establish an early warning and support system for academic difficulties. Use information platforms to monitor students' attendance and regular grades, and intervene early for students who are struggling or have procrastination habits. By establishing a "professional mentor + peer tutoring" mechanism, provide personalized academic guidance to alleviate the anxiety caused by a lack of ability. Third, enhance the integration of engineering ethics education. In line with professional engineering education accreditation requirements, deeply integrate academic integrity education with courses like Engineering Ethics, making students aware of the potential long-term impact of misconduct on their future professional

qualifications (e.g., engineer registration).

4.3 Upgrade to a Differentiated Examination Management System Combining Human and Technical Defenses

Faced with the rising proportion of cheating using electronic devices and the high incidence in large exam halls, a differentiated examination management strategy is needed. Implement risk-based management of exam venues. For high-risk venues like large lecture halls (over 70 students) and public teaching building exam rooms, the standard 1:25 proctor-to-student ratio should be abandoned in favor of "double proctoring" or adding mobile patrol proctors. At the same time, promote the use of a randomized seating system to break the traditional pattern of seating by student ID number. Strengthen technical defense capabilities. For increasingly covert electronic device cheating, deploy signal jammers and radio monitoring equipment in key exam venues. For proxy exam-taking in non-written tests like physical fitness tests, introduce identity verification technologies such as facial recognition or fingerprint scanning to ensure "one person, one identity" [7]. Improve the feedback mechanism for disciplinary actions. Change the current situation of "heavy on punishment, light on education" and overly lenient lifting of probations. In addition to administrative sanctions, students should be required to take a remedial course on academic integrity, and this should be substantively linked to their eligibility for awards, honors, and party membership recommendations.

4.4 Foster a Campus Academic Ecosystem of Diverse Evaluation and De-Utilitarianism

Societal employment pressure and "GPA-centrism" are the deep-rooted causes of cheating. Universities should actively dismantle this singular evaluation orientation. In the university's awards and honors system, the absolute weight of exam scores should be reduced, and diverse evaluation dimensions such as innovation and entrepreneurship achievements, social practice experience, and contributions to research projects should be introduced. This will provide diverse pathways to success for students with different talents, reducing the vicious cycle of competition driven by a single performance metric. At the same time, through university-enterprise cooperation platforms, convey to students the real hiring standards of the industry—those practical skills and professional qualities are valued far more than a mere transcript. This will guide students to adopt a "competency-based" rather than a "score-based" view of learning, fundamentally correcting the utilitarian motives that lead to cheating.

5.Conclusion

Based on cheating data and survey results from H University undergraduates between 2021 and 2025, this study found that exam cheating behavior exhibits clear periodic fluctuations, with a rebound and sustained high level after 2023. Structurally, cheating is concentrated in professional courses and among sophomore and junior students, and is particularly prominent in large-class exams and high-risk course contexts. Its occurrence is closely related to factors such as monolithic course assessment methods, concentrated academic pressure, and shortcomings in examination management and integrity education. Therefore, a multi-faceted and coordinated approach is needed, involving student academic support, reform of professional course assessment, optimization of examination management systems, and the cultivation of a social environment of integrity, to gradually build a long-term governance mechanism where students are "unwilling to cheat, afraid to cheat, and unable to cheat."

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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