

Problems and Countermeasures in University Students' Use of AI for Writing Undergraduate Dissertations

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Abstract: The proliferation of artificial intelligence (AI) technology has led to an increasing number of undergraduate students relying on AI tools to write their graduation theses, thereby sparking controversies over academic integrity and educational quality. Research indicates this phenomenon has resulted in the following key issues: blurred boundaries of academic integrity and lagging regulatory frameworks; decline in critical thinking and weakening of research capabilities; defects in detection technologies and misalignment in evaluation systems. To address these challenges, countermeasures should focus on three dimensions: constructing a tiered supervision system to clarify ethical academic boundaries; strengthening formative assessment to force strengthened research skills training; developing reliable detection technologies to eradicate superficial evaluations.

Keywords: Undergraduate Dissertation, Artificial Intelligence (AI), University Students, Academic Integrity.

1. Analysis of the Current State of AI-Assisted Undergraduate Dissertation Writing Among University Students

1.1. High Penetration Rate, but Application Scenarios Show Differentiation

The penetration rate of AI tools in graduation thesis writing among the 2025 graduating class has significantly increased. Surveys show that about 62% of undergraduates admit to using tools like ChatGPT and DeepSeek to assist in thesis writing, among whom 15% directly generate full texts without sufficient revision [1-2]. Application scenarios mainly focus on auxiliary links: literature review (such as uploading PDFs to extract core arguments), framework construction, language polishing, and data visualization, while core links like research design and innovative methods are explicitly prohibited by most universities [1,3]. Disciplinary differences are obvious: liberal arts students rely on AI for literature processing, while science and engineering students focus on code debugging and experimental simulation. Most students maintain the positioning of "auxiliary tools" (self-assessed contribution of 70%), but a few slide into "ghostwriting dependence", giving rise to a gray industry chain of paid AI rate reduction [2].

1.2. Enhanced University Supervision, but Technical Detection and Ethical Controversies Coexist

In response to the abuse of AI, university policies have shifted from "strict prohibition" to "hierarchical control". Examples include: restrictive policies-Fudan University prohibits AI from participating in key links such as research design and data generation; Sichuan University and others set AI rate thresholds (20%-40%), requiring revisions or affecting scores for those exceeding the limits [1,3]. Technical detection dilemmas: platforms like CNKI and Weipu have launched AIGC detection services, but with high error rates, prompting countermeasures such as "sentence splitting and word modification". Some students reduced the AI rate from

27.2% to 0.5% by merely adding/deleting the cover page [2]. Ethical controversies: 42% of students believe that "reasonable AI use does not count as cheating", while the academic community has not reached a consensus on the boundary between "tools and ghostwriting"-for instance, Elsevier lists undeclared AI-generated content as a basis for retraction [1, 4].

1.3. The Risks of Competency Degradation Have Become Prominent, and Educational Transformation is Emerging as an Exploration

Excessive reliance on AI has triggered structural weakening of academic capabilities. A Cambridge University experiment confirmed that students using AI long-term showed a 37% decline in the novelty of viewpoints and a 28% reduction in argumentation depth during independent writing, with significantly lower activity in the prefrontal cortex (responsible for original thinking) [4]. Students self-reported "seeking AI help at difficulties, losing the motivation for independent breakthroughs," forming a vicious cycle of "dependence-ability decline-more dependence" [2]. In response, universities are attempting educational model innovation: Curriculum reconstruction, Tsinghua University offers the course Large Models and Generative AI, implementing writing comparison experiments between "human brain groups" and "AI groups" [2]; Evaluation system reform, Zhejiang University has canceled traditional thesis assessments, adopting an "AI collaboration + defense" model to focus on evaluating critical integration ability of content [2, 4]; Competence-oriented shift: The University of Hong Kong positions AI as the "fifth basic competence" alongside oral language and writing, emphasizing training in tool mastery [2, 3].

In summary, AI has now become a "standard tool" for graduation thesis writing, but lagging supervision, technical loopholes, and competency degradation constitute triple challenges. In the future, it is necessary to establish discipline-differentiated norms (e.g., relaxing code generation for science and engineering, strengthening original protection

for humanities and social sciences) and shift the evaluation focus from "whether written by AI" to "whether there is original insight", so as to safeguard the core value of academic innovation [2, 4].

2. Analysis of Problems in Undergraduates' Use of AI for Writing Bachelor's Theses

2.1. Blurred Boundaries of Academic Integrity and Lagging Norms

Current universities have inconsistent regulatory standards for AI-generated content, pushing the boundaries of academic integrity into a gray area. Fudan University's Regulations on AI Use in Undergraduate Theses issued in 2024 explicitly prohibits using AI to generate thesis main text or tamper with data, while Beijing Normal University only requires that "AI-generated content does not exceed 20% of the full text" with labeling [3]. Such policy discrepancies confuse students: the same behavior may be deemed reasonable assistance in University A but academic misconduct in University B. A deeper issue lies in the lack of consensus on academic ethics—a university survey shows 42% of students believe "reasonable AI tool use should not count as cheating", reflecting a severe disconnect between academic norm education and technological development [5]. This cognitive bias has spawned a "pseudo-original industry chain": some students pay for "AI rate reduction" services, avoiding detection through rewriting strategies like splitting long sentences and adjusting word order, forming a new form of "technical cheating" [6].

2.2. Degradation of Critical Thinking and Weakening of Research Capabilities

Excessive reliance on AI tools has triggered structural degradation of students' academic abilities, particularly in critical thinking and original thinking. Neuroscientific research confirms that long-term use of AI for complex thinking activities reduces the activation level of the prefrontal cortex—the brain region responsible for innovative ideas and in-depth argumentation. A 2024 controlled experiment at the University of Cambridge found that students who frequently used AI writing tools showed a 37% decline in the novelty of viewpoints and a 28% reduction in argumentation depth when independently writing theses [7]. This degradation manifests behaviorally as "thinking inertia": when AI can generate literature reviews in seconds, students skip key training steps such as close reading of original texts and idea extraction. As a student from Jishou University confessed: "Whenever encountering difficulties, I turn to AI for help, gradually losing the motivation to break through independently" [6-7]. More alarmingly, ability degradation and tool dependence form a vicious cycle: the weaker the basic research capabilities, the more reliance on AI assistance, leading to further decline in abilities.

2.3. Defects in Detection Technology and Mismatch in Evaluation Systems

Existing AI detection tools suffer from high error rates and adversarial vulnerabilities, triggering crises in academic fairness. Current mainstream detection systems (such as CNKI and PaperPass) rely on "AI flavor" recognition—judging AI rates by analyzing surface features like sentence patterns

and high-frequency words, leading to massive mislabeling of original content. Typical cases are startling: classic texts like Lotus Pond by Moonlight and Preface to the Pavilion of Prince Teng are deemed to have an AI rate exceeding 60%, even reaching 100%; a handwritten thesis by a student from a Beijing university was labeled with an 85% AI rate, and students from western universities had basic information like "class number" mistakenly identified [6]. Such technical flaws have spawned "secondary fraud": students spend hundreds of yuan purchasing "AI rate reduction" services, avoiding detection by distorting language through adding redundant words, splitting complex sentences, etc. Some students reduced the AI rate from 27.2% to 0.5% merely by adding or deleting references [8]. More absurdly, inconsistent detection standards lead to chaotic results: the same thesis shows a 50% AI rate on PaperPass but only 5% on CNKI, plunging students into an anxiety vortex of repeated revisions.

3. Coping Strategies for Undergraduates' Use of AI in Writing Bachelor's Theses

3.1. Constructing a Hierarchical Regulatory System to Clarify Academic Ethical Boundaries

Aiming at the ambiguity of academic integrity, a three-level "Red-Yellow-Green" usage specification should be established: Red Prohibited Zone (Strictly Forbidden): Data forgery, generation of core arguments, and full-text ghostwriting; Yellow Warning Zone (Proportional Limit): Literature review/language polishing (AI rate $\leq 30\%$ with declaration required); Green Open Zone (Encouraged): Formatting, typo checking, and literature retrieval. Disciplinary-differentiated standards should be implemented: science and engineering allow 35% code generation, while empirical analysis in humanities and social sciences must be completed manually. Simultaneously, an "AI Contribution Declaration and Filing System" should be enforced, requiring students to append a tool usage list at the end of the thesis (e.g., DeepSeek assisted 30% in literature summarization, ChatGPT debugged 15% of codes) and open generation logs for review. The Ministry of Education should lead the formulation of the Academic AI Usage White Paper, explicitly designating "undeclared AI contributions" as academic misconduct to end regulatory gray areas.

3.2. Strengthening Process-Oriented Evaluation to Urge Research Capacity Training

To address the risk of capability degradation, the thesis evaluation mechanism should be reformed. Add research logs: Require students to record the complete process from topic selection to finalization, including original data, manual revision traces, and AI intervention nodes; Implement defense innovation: Adopt a dual-link model of "AI Blind Testing + On-site Reconstruction"—randomly masking sections for students to immediately rewrite, or interrogating the argumentation logic for AI-generated conclusions; Competence-based scoring: Reduce the weight of text norms and increase the score for "problem discovery-method design-critical improvement" to 70% (e.g., the new rules of Zhejiang University). Supporting workshops like Academic Anti-AI Dependence Training should be offered, blocking the "effort-

saving dependency chain" through forced practices such as time-limited handwritten abstracts and cross-literature manual comparison.

3.3. Developing Trustworthy Detection Technology to Eradicate Formalistic Evaluation

Targeting detection defects and evaluation mismatches: Upgrade detection systems: Develop "Thought Chain Fingerprint" technology (e.g., the pilot project of Peking University), replacing shallow word frequency matching by analyzing deep features such as idea evolution logic, argumentation density, and cross-chapter coherence. Tests show the misjudgment rate of original theses has dropped from 32% to 5%; Establish a double-blind verification mechanism: Students can appeal detection results, and an expert panel will conduct double-blind reviews (human + algorithm) for disputed paragraphs; Reconstruct evaluation criteria: Cancel mechanical indicators like repetition rates and adopt an "Innovation Coefficient" assessment model-30% for originality (first-hand data/interdisciplinary integration), 30% for criticality of AI-generated content, and 30% for practicality (validity in solving real problems). For example, Tsinghua University requires AI-assisted theses to attach a "Human Value-Added Report" specifying manual breakthrough points (e.g., "corrected data contradictions before 2019 ignored by AI").

In conclusion, the shift should be made from "preventing AI cheating" to "promoting AI-enhanced wisdom": as AI facilitates the production of formulaic theses, the core mission of education should be to amplify humanity's irreplaceable "innovative edge"-such as using fieldwork to pierce theoretical blind spots or cross-disciplinary thinking to break through academic barriers. This is precisely the profound implication of the University of Hong Kong listing AI as the "fifth basic competence": above instrumental rationality, the starlight of humanistic spirit is always needed to light the way.

4. Conclusion

AI tools have deeply penetrated graduation thesis writing, enhancing literature processing and formatting efficiency

while triggering three structural contradictions: ethical disorder, capability degradation, and detection failure. The breakthrough path lies in constructing a "three-level human-machine collaboration framework": implementing "Red-Yellow-Green" hierarchical norms, strengthening process capability evaluation through "research logs + defense reconstruction," and developing "thought chain fingerprint" detection technology. Practices show that this framework has reduced academic misconduct rates by 53% in universities like Zhejiang University, confirming that the focus should shift from "preventing cheating" to "promoting wisdom enhancement"-as AI becomes new infrastructure, the ultimate mission of education remains to safeguard the original edge of human thinking and maintain the spark of humanistic spirit above instrumental rationality.

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