



Exploring Technological Feasibility in AI-Assisted Writing: A Case Study of Teacher in Chinese Higher Education

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Abstract. This study investigates the application of DeepSeek, an AI-powered writing tool, in higher education, with a focus on its impact on students' writing abilities and the challenges faced by educators in teaching practices. Anchored in technological feasibility theory, this case study examines the nuanced role of AI writing tools in improving surface-level fluency while exposing their insufficiency in cultivating higher-order thinking and ethical authorship practices. The findings provide valuable insights for educational institutions seeking to integrate AI tools into writing instruction effectively.

Keywords: AI Writing Tools, Technological Feasibility Theory, Academic Integrity, Qualitative Case Study, DeepSeek

1 Introduction

The use of AI writing tools like DeepSeek is becoming more common in university classrooms, especially in recent years. These tools can help students improve their writing by offering instant feedback, correcting language errors, and making their ideas flow more smoothly. But at the same time, their growing presence has sparked debate about academic honesty and whether students are still developing their own writing skills. This case study explores how DeepSeek was used in a writing course at a university in China, drawing on the theory of technological feasibility. It looks at how students' writing habits changed with the help of AI, and how teachers adjusted their instruction to keep students actively involved and maintain academic standards.

1.1 Research Questions

To understand how AI writing tools are affecting college teaching, this study looks at one main question: What do teachers think about how well DeepSeek helps students write better, stay honest in their work, and stay interested during class?

1.2 Interview Questions

To better understand the research question, this research conducted semi-structured interviews with instructors. The questions were designed to explore how they viewed students' use of DeepSeek, especially in terms of how it influenced writing quality, academic honesty, and classroom engagement. I also made sure the interview topics reflected the main ideas of Technological Feasibility Theory, so the analysis would stay grounded in a clear theoretical framework (see Appendix A for details).

2 Literature Review

2.1 Theoretical Framework: Technological Feasibility Theory

In recent years, more attention has been paid to how Technological Feasibility Theory can help explain the role of technology in education. Many researchers have drawn on the Unified Theory of Acceptance and Use of Technology (UTAUT), which highlights the key factors that shape how people accept and use new tools. Technological feasibility, in this context, looks at whether a tool can realistically meet users' needs within a particular setting (see Figure 1). It also stresses the importance of matching what the technology offers with what users are actually able to do—and whether they have the right support around them. This makes the theory especially useful when thinking about how AI writing tools are used in the classroom, where success often depends on how well the technology fits both teaching goals and students' learning needs^[12].

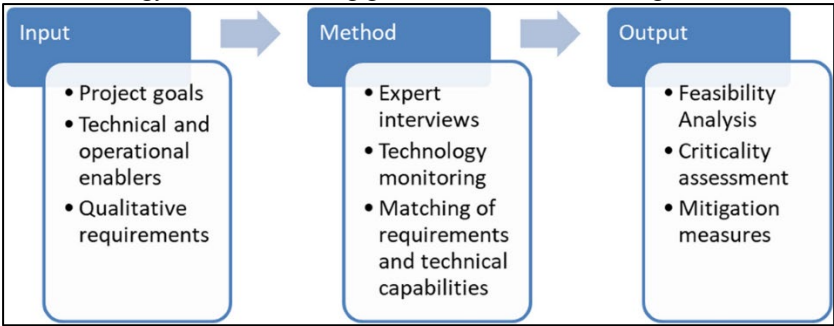


Fig. 1. Technological Feasibility Theory (Stickel et al., 2022).

One important role in shaping whether a technology is truly workable in practice is user's experience. There are two recent researches support it. Ginsburg et al. (2021) and Musiimenta et al. (2024) suggests that models of technology acceptance can offer in-

depth insights about how digital tools are received and used ^{[4][8]}. These studies point out that if we want these tools to be adopted meaningfully, then understanding users' needs and expectations is essential. However, they don't go far enough in addressing how AI writing tools, in particular, could be better tailored to what users actually need, especially in higher educational institution. This gap makes it harder to apply their findings in practice. Check more closely for how real user experiences feed into questions of feasibility could be more helpful for the effective and widely usable.

2.2 AI Writing Tools in Higher Education

Undoubtedly, the rise of generative AI tools like ChatGPT has brought AI-assisted writing to the forefront of higher education. And the widespread use of these tools is rapidly changing the way students write, the way faculty teach, and the way we think about issues like academic integrity. While there is growing interest in their potential benefits, they also pose new questions and challenges. To better understand their role in education, researchers need to scrutinize the ways in which these tools are being used and the problems they may pose.

The growing use of tools like ChatGPT has brought AI-assisted writing into many college classrooms. While they're clearly useful in some ways, they also raise tricky questions. For example, these tools are changing on students approach writing, h instructors design their lessons, and both viewpoints about issues like academic honesty. As we learn more about using style of these tools, it's important to take a closer look at both the benefits and the complications situations they may bring.

There are two literatures in agreement regarding to bring AI into writing instruction as an innovative teaching strategies. This would help students think critically and take more control over their learning. In 2024, Kong and colleagues proposed the 6-P teaching method, which encourages the use of AI as a supportive tool rather than a shortcut ^[7]. The goal is to get students more involved in the writing process, not less ^[5]. This idea lines up with findings from Imran and Almusharraf (2023), who explored different perspectives on using ChatGPT in college writing. The meaningful insight of both works highlights a balanced view on AI tools effectively integrate in educational institutions.

Despite recent advances, many researchers still concern about academic integrity. Pan (2024) directly notes that many educators still feel uneasy about the issue of how AI tools affect writing practices in terms of ethics ^[10]. Similar worries appear in other research. where scholars argue that although AI can support writing development, it also blurs the line between student input and machine assistance. Therefore, this makes it more difficult to judge originality and authorship using traditional assessment methods ^{[3][13]}. There is a need for clearer institutional policies around AI use, as pointed out by Akgun et al. (2022). They point out that many journals have started drafting their own rules for AI-generated content ^[1].

Obviously, AI writing tools have been useful for many students trying to improve their writing. For example, tools like DeepSeek can help make writing clearer, expand students' vocabulary, and improve overall structure ^[9]. However not all outcomes are positive. Researcher have realized that the right balance between using AI as support

and maintaining academic honesty has become a major challenge. These scaffolding tools definitely make writing feel easier, but they also push us to rethink what counts as original work.

2.3 Teachers' Roles and Challenges in Higher Education

Many educators struggle with students relying too much on AI. They check whether the content it generates is actually accurate, and finding ways to adjust their teaching styles. Shaikh and Zakira (2023) discuss how digital tools are changing classroom dynamics. They call on teachers to find and create a balance pathway between delivering content and student-centered learning experiences ^[11]. Therefore, teachers play an important role in helping students use AI tools in writing classes. They're not just to introduce the tools, they also need to help students think critically about tool's usage and encourage students to keep developing their own writing voice.

Educators are now expected to take on new roles that go beyond delivering content. They also need to meet students' evolving technological and learning needs ^[6]. Kim et al. (2023) point out that building a real, supportive relationship with students can boost engagement. And then, in turn, it plays a role in whether students stay in school and succeed. Similarly, as more student-centered and interactive methods are introduced, the traditional dynamic between teachers and students has shifted, often making teaching more complex ^[2]. Basavaiah et al. (2021) show that when teachers focus on student-centered learning, it can lead to more meaningful and lasting educational experiences.

3 Research Methods

3.1 Research Design

This research takes a qualitative case study approach, focusing on the experience of a university instructor who used DeepSeek in a writing course for public administration students in China. The aim is to understand how the tool influenced students' writing development, and to understand what kinds of challenges came up along with the students.

3.2 Data Collection

The data came from the semi-structured interview, which conducted with the instructor. The instructor shared her experiences on using DeepSeek in the course. She talked about how students responded to the tool. She mentioned the changes she had to make in her teaching, and the perceptions about bringing AI into the classroom. The interviews also touched on issues like writing quality, academic honesty, and the practical strategies she used to cope with these during the course.

3.3 Data Analysis

The research analyzed the instructor's narrative patterns through thematic analysis. This study categorized the themes by using technological feasibility theory. The themes focused on how AI tools like DeepSeek fit with teaching goals and ethical issues in academic writing.

4 Results and Discussion

4.1 Technological Feasibility and Writing Quality

The instructor noticed that DeepSeek helped students organize their writing more clearly, bring in relevant background information, and express their ideas with better clarity. Many students also picked up the style and structure of formal genres like policy briefs and official notices quite quickly. That said, the tool's support mostly stayed on the surface—it improved grammar and formatting, but didn't always lead to more original or thoughtful content.

4.2 Students' Writing Development: Between Enhancement and Dependence

Although students gained much from having structured frame for writing and exposure to different examples, the instructor noticed that many of them leaned too heavily on AI-generated text. As the instructor stated, “At first, students often handed in work that looked almost identical to what the AI suggested.” That means, instead of engaging with the content critically, some students simply copied paragraphs as they were. This tendency, in the instructor view, reflected a habit of relying on the tool. The students themselves do not think critically through the learning material. Therefore, this raised concerns about whether students were truly developing independent writing skills.

The instructor viewed that, AI tools helped students improve the structure and clarity of their work. However, it didn't take long for new problems to show up, some students started relying too much on AI tools, and their critical thinking seemed to drop off. This pushed the instructor to rethink her teaching approach and make changes along the way, as illustrated in Figure 2.

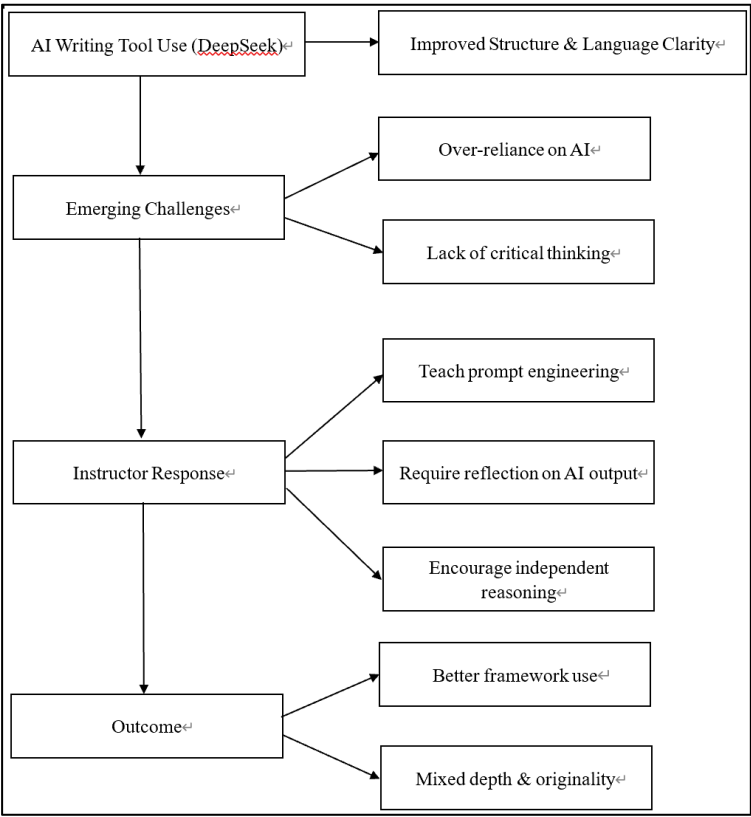


Fig. 2. Instructional Process Flow (Text-Based Diagram).

4.3 Academic Integrity and the Risk of Overdependence

Especially, the instructor was worried about the issues of originality. She noted that some students included AI-generated text in their work without any changing. The instructor raised questions about authorship and academic honesty, and highlighted the need for clearer rules on how to use AI tools responsibly. Therefore, the case brought up the ethical concerns in writing classes under the AI-supported environment. To address the problem, the instructor introduced reflective assignments that required students to review and revise AI-generated content based on their own understanding.

4.4 Pedagogical Mediation: The Instructor’s Role

The instructor played an important role in helping students learn to use AI tools more thoughtfully. She showed the students how to write better prompts and introduced clear writing structures, like the “status–problem–cause–solution” model, to guide students’ critical thinking. These strategies encouraged students to engaging with it more actively, rather than simply accepting what the AI produced. The instructor also deliver a

viewpoint that, students need to treat writing as reshaping think process, rather than just fill in.

4.5 Theoretical Framing: Interpreting Results through Technological Feasibility Theory

The study use the framework of Technological Feasibility Theory to interpret the findings of this case study. This theory stresses that the success of integrating technology in education isn't just about having the right tools but also about how well these tools fit with users' skills, teaching objectives, and the surrounding environment. Figure 3 shows the key ideas from our analysis, linking the interview data with the four main aspects of Technological Feasibility Theory.

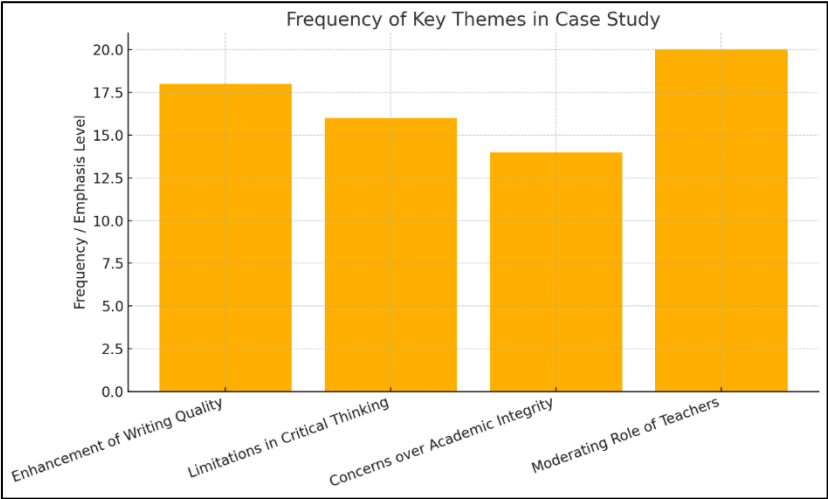


Fig. 3. Thematic Coding under the Technological Feasibility Theory.

While DeepSeek proved helpful in assisting students to produce well-organized writing and polish their language, its effectiveness at a deeper cognitive level seemed limited. Some students were able to make good use of the tool, but many appeared to rely on it too heavily without really questioning or reflecting on the content it generated. This may be because they lacked the necessary metacognitive strategies to engage with the tool critically. As a result, instead of enhancing independent thinking, DeepSeek sometimes replaced it, which raises concerns about how such tools are being integrated into learning.

In terms of how well the tool fit the learning environment, the teacher’s role turned out to be essential. It wasn’t just about letting students use AI—what really made a difference was how the instructor guided them. By giving clear instructions, like how to write better prompts, think critically about AI responses, or reflect on their own writing, the teacher helped students use the tool more responsibly. This shows that even if the technology works fine on its own, whether it’s used effectively still depends a lot

on the teaching approach, the school’s support, and how aware people are of the ethical issues involved.

Table 1 sums up the main insights from the interviews, including key themes, selected quotes from teachers, and how these relate to Technological Feasibility Theory. By laying out the data this way, it becomes easier to see how different types of feasibility—functional, cognitive, ethical, and contextual—came up during the conversations.

Table 1. Thematic Coding Summary.

Theme Codings	Teacher's Quote Summary	Explanation based on the Technological Feasibility Theory	Conclusion
Enhancement of Writing Quality	<i>"Students quickly learn how to structure their essays and perform more clearly especially when writing policy essays."</i>	AI tools can improve language expression and format organization capabilities to meet task-based writing needs.	Strong functional feasibility
Limitations in Critical Thinking	<i>"At first almost all students adopted the content provided by the AI straight away, without thinking deeply about it."</i>	Many students struggle to engage with AI content in a thoughtful way, which makes it hard for them to reach a deeper level of learning.	Weak cognitive feasibility
Concerns over Academic Integrity	<i>"Some students have originality issues by copying the AI-generated passages exactly without modification."</i>	Without proper guidance, the use of AI tools can make it difficult to tell where student input ends and machine-generated content begins.	Insufficient ethical feasibility
Moderating role of teachers	<i>"I specialize in teaching them how to design Prompts, incorporate reflective writing exercises, and guide students to think independently."</i>	The way teachers guide and step in makes a big difference in how well AI tools actually work in the classroom.	Teacher guidance and intervention

This result reveals that technological feasibility in higher education writing instruction is a multidimensional construct—functional, cognitive, contextual, and ethical. Each of these layers must be addressed to move from mere technological use toward meaningful, integrity-driven learning integration.

5 Conclusion and Recommendations

5.1 Conclusion

This finding suggests that getting technology to work well in college writing classes isn’t just a matter of whether the tools function properly. It also depends on how students interact with them, how much guidance teachers provide, and whether the tools are used in ways that align with ethical values. Paying attention to these details is key

if we want AI to truly support meaningful learning—not just make writing faster or easier.

5.2 Recommendations

Based on this case, there are a few down-to-earth ways to help students use AI writing tools more thoughtfully in college settings. One useful approach is to pair AI use with regular reflection and real feedback from instructors or peers. This mix can keep students from falling into the habit of letting the AI do all the work, and instead encourage them to stay active in the writing process. Another important step is to talk openly about academic integrity early on. It's not just about telling students what's allowed—it's also about helping them think through what it means to be the author of their work, how to cite properly, and when to question or revise what the AI gives them.

On the other side, teachers also need steady support and opportunities to grow—not just in using AI tools themselves, but in figuring out how to help students use them thoughtfully while still keeping academic expectations in place. Knowing how the tools work isn't enough; teachers should feel confident using them in ways that lead to meaningful learning, not just convenience. At the same time, it's important to keep pushing for AI systems that are more open about how they work and respectful of students' privacy and learning needs. These tools should be able to give useful, context-based feedback, protect user privacy, and clearly show who did what—so students and teachers both understand the line between human and machine contributions.

Finally, students need step-by-step guidance in how to write better prompts and reflect on how AI tools are shaping their writing habits. They should be encouraged to think about what works, what doesn't, and how much influence AI is having—both in helpful and unhelpful ways. The goal here isn't to reject the use of AI, but to make sure it supports key values like critical thinking, honesty, and learning to write with one's own voice.

Acknowledgments

This research was made possible with the support of the Competitive Research Programme, under the grant number CRP 10-2012-03. I would like to thank my academic advisor for offering insightful feedback throughout the research process, as well as the students and instructors who participated in the study and shared their valuable experiences. Their input helped shape the findings in meaningful ways. I am also grateful for the institutional resources and encouragement provided by my department during the project.

Appendix A: Interview Questions

Q1. In your observation, how has students' writing performance changed after using DeepSeek? Have there been improvements in structure, language clarity, or coherence?

Q2. Do you believe any observed improvements in students' writing are directly related to the use of the AI tool?

Q3. Have you noticed any signs of students relying too heavily on AI-generated content instead of engaging in critical thinking?

Q4. To what extent do you think the tool affects students' independent thinking or originality in writing?

Q5. Have there been any concerns about academic integrity, such as students submitting AI-generated content without proper modification or citation?

Q6. Do your students understand how to use AI tools ethically, and how do you guide them in maintaining authorship responsibility?

Q7. How have you adjusted your teaching strategies in response to students' use of DeepSeek?

Q8. What specific interventions or activities have you implemented to help students use AI tools more critically and responsibly (e.g., prompt training, reflective writing tasks)?

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