

A Study on the Two-dimensional Effects of College Students' English Writing Literacy Empowered by Digital Intelligence¹

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Article Detail:	Abstract
<p>Received: 19 May 2026; Received in revised form: 11 Jun 2026; Accepted: 15 Jun 2026; Available online: 19 Jun 2026 ©2026 The Author(s). Published by International Journal of English Language, Education and Literature Studies (IJEEL). This is an open access article under the CC BY license (https://creativecommons.org/licenses/by/4.0/). Keywords— digital intelligence empowerment; English writing literacy; two-dimensional effects</p>	<p><i>As artificial intelligence becomes more widely used in foreign language learning, various AI-based writing assistants have become a common tool for university students when completing English writing tasks. To examine how digital technologies influence students' overall writing abilities in both positive and negative ways, we conducted a questionnaire survey among non-English majors at the Beijing Institute of Petrochemical Technology. This paper analyzes the participants' actual use of intelligent writing tools, as well as their personal experiences and evaluations of how these tools affect their writing performance. We also offer practical suggestions to mitigate the negative impacts associated with overuse of such technologies. It is hoped that the findings will provide useful insights for English writing instruction and self-study in the current digital age.</i></p>

I. INTRODUCTION

China has been actively promoting the digital transformation of education and encouraging deeper integration between artificial intelligence and daily teaching activities. Popular generative AI platforms

such as ChatGPT and WPS AI have greatly changed how universities train students and deliver professional knowledge. The Ministry of Education has released two important guidance documents for college English teaching, issued in 2007 and 2020

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respectively. Both documents point out that modern college English education should no longer focus merely on knowledge explanation. Instead, educators need to pay more attention to training students' critical thinking skills and creative thinking potential.

In real classroom practice, however, we can clearly see a conflicting situation. On one hand, intelligent writing tools can fix grammar errors, help organize article structures and polish word choices, which effectively lifts students' work quality and saves their writing time. On the other hand, many students gradually rely too heavily on these tools. This bad habit leads to lazy thinking, identical content across different papers and weakened independent thinking capabilities. All these problems go against the fundamental goal of cultivating versatile talents with solid foreign language skills.

Given the above situation, this research focuses on exploring how AI writing tools affect students' learning process. With real survey data, we analyze the changes in students' writing skills and thinking

modes under the influence of digital tools. The final results are meant to provide practical ideas for improving college English writing teaching.

II. RESEARCH METHODOLOGY

This study adopted random sampling and questionnaire investigation as the main research methods. We handed out questionnaires to non-English majors in our university, and finally collected 255 valid response forms. The survey used a five-point Likert scale, where score 1 represents strong disagreement and score 5 stands for strong agreement.

The questionnaire was divided into three main parts: respondents' basic personal information, daily usage of AI writing tools, and their personal views on how these tools affect English writing. The whole investigation mainly explores the advantages of intelligent tools as well as the negative outcomes like weakened thinking ability caused by excessive dependence.

III. ANALYSIS OF RESEARCH RESULTS

3.1 Characteristics of Digital Intelligence Tool Usage

Table 1: Weekly Frequency of English Writing among Respondents

Category	Hardly Write	1-2 Times	3-5 Times	6 Times or More
Proportion	48.8%	46.5%	3.1%	1.6%

Table 2: Major Scenarios of Using AI Tools for English Writing

Category	Course Assignments	Exam Preparation	Academic Writing	Daily Communication	Others
Proportion	55.6%	29.6%	7.4%	5.6%	1.9%

From the statistics listed in the two tables above, we can find that most students do not practice English writing on a regular basis. In most cases, students only write English articles to finish school assignments or prepare for different exams. Their writing behavior is mostly passive and intermittent, and few of them take the initiative to do writing practice in daily life.

Such a learning state makes it difficult for students to steadily improve their writing skills, and it also reflects that many learners lack learning motivation and self-training awareness. Even so,

intelligent writing tools have already become an indispensable part of students' learning environment. These digital tools bring new opportunities for the improvement of students' English writing ability.

3.2 Positive Effects Brought by Intelligent Writing Tools

Using AI writing software can obviously cut down the time students spend on writing and streamline the whole writing process. According to the data in Table 3, nearly 70% of participants admitted that their work efficiency improved after using relevant tools. This

fully proves that such digital tools do work well in saving time for English writing.

These tools can also finish basic tasks like word searching and simple sentence checking. When students are freed from these repetitive trivial works, they are able to spend more time thinking about writing themes and designing article logic. This is also the main reason why AI writing tools have gained great popularity among college students in recent years.

Besides improving efficiency, intelligent tools can also reduce grammar mistakes and make students'

Table 3: Improvement in Writing Efficiency after Using AI Tools

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Proportion	32.94%	40.00%	23.92%	1.57%	1.57%

Table 4: Improvement of Grammatical Standardization via AI Tools

Category	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Proportion	1.6%	4.0%	41.0%	35.0%	18.4%

writing more standard, as shown in Table 4. This function offers great help to students with relatively weak English foundations, preventing basic grammatical errors from lowering the overall quality of their articles. Meanwhile, a large number of participants held neutral attitudes toward these functions. This difference shows that students have different feelings about the practical value of AI tools, which also gives us new directions to combine digital technology with in-class writing teaching.

3.3 Problems and Challenges in Current English Writing

There is no doubt that digital writing tools bring plenty of convenience to students' English learning. However, over-reliance on these tools has become a common problem across campus. For quite a lot of learners, AI tools are no longer just auxiliary helpers; they have gradually become a replacement for independent writing.

The data in Table 5 clearly reflects this phenomenon. Only 7.0% of respondents stated that they rarely depend on intelligent tools. More than 70% of students rely on these tools to different degrees. Among all participants, 60% reported moderate dependence, while 13% said they rely on AI tools heavily or even completely.

Once students get used to relying on AI output, their ability to think independently will gradually decline. Most of them will directly accept the content generated by artificial intelligence, without thinking deeply about the writing themes. They will even

follow AI suggestions blindly, even when these ideas conflict with their own thoughts.

Table 6 shows the survey results on students' critical thinking ability. Only 7.45% of participants believed they could carry out in-depth analysis when facing complicated writing topics. Over 69% chose neutral or negative options, and 48.63% rated their own critical thinking ability at an average level.

Heavy dependence on AI also leads to another problem: most students' compositions lack personal characteristics, and similar content can be seen in a large number of papers. If students keep handing over theme analysis and content creation to digital tools, their cognitive ability and memory will gradually decline, which will eventually set barriers to the long-term development of their comprehensive English writing ability.

Table 5: Degree of Reliance on Digital Intelligence Tools

Category	Total Reliance	Strong Reliance	Moderate Reliance	Mild Reliance	Barely Reliant
Proportion	3.0%	10.0%	60.0%	20.0%	7.0%

Table 6: Ability to Conduct In-depth Analysis and Critical Thinking on Complex Writing Topics after Using AI Tools

Category	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Proportion	4.71%	16.08%	48.63%	23.14%	7.45%

IV. TARGETED SUGGESTIONS

4.1 Update Teaching Ideas and Explore New Teaching Modes

Teachers can make full use of digital writing tools to design tiered teaching plans, so as to provide targeted guidance for students with different English levels. At the same time, teachers need to arrange regular writing exercises matched with classroom knowledge, to help students increase writing frequency step by step.

In the digital age, teachers should also adjust their roles in teaching. Apart from passing on professional knowledge, they need to guide students to form correct attitudes towards AI tools. It is necessary to help students develop critical thinking when using digital resources and teach them to use these tools in a reasonable way.

4.2 Strengthen Self-awareness and Avoid Negative Impacts

Students can combine teachers' personalized guidance with AI tools to make exclusive English writing training plans. They can also use learning resources recommended by big data to conduct targeted skill training.

A practical learning method is to combine content generated by AI with personal life experiences and real thoughts, so as to form unique viewpoints in writing. Additionally, students should build up confidence to express ideas with their own words and get rid of the fear of making language mistakes. When organizing article content, do not worry too much about sentence complexity, and try to take the initiative to finish writing independently.

In this way, students can make the most of the advantages of digital tools, while keeping their independent thinking ability. It can effectively avoid content homogenization and the decline of language expression ability caused by overusing AI.

V. CONCLUSION

Good English writing ability is a basic skill that every college student needs to master. The wide use of digital writing tools has both positive and negative influences on students' writing development. On the positive side, these tools can help learners fix language errors efficiently and improve the overall quality of written content. On the negative side, excessive use will make students lose their sense of independence, form tool dependence and give up deep thinking.

Despite all the existing drawbacks, we cannot deny the practical value of AI writing tools, especially for new learners and students with weak language foundations. In daily teaching, teachers must guide students to regard AI tools as learning assistants rather than writing substitutes. Schools and teachers can also adjust the evaluation standards for writing assignments, and pay more attention to checking students' original ideas and logical thinking.

With proper guidance and standard usage rules, digital technology can truly serve college English education, and help students steadily improve their comprehensive writing ability.

REFERENCES

- [1] Yang S. Decolonizing EFL Writing Education: An L2 Writing Teacher's Poetic Autoethnography[M]. Taylor & Francis, 2024.
- [2] Zhao X W, Xin C H, Liu H T, et al. Construction and Application of a Dynamic Assessment Model for College English Writing Based on CSE Empowered by Digital Intelligence[J]. Pacific International Journal, 2026.
- [3] LIU S, YU G. L2 learners' engagement with automated feedback: an eye-tracking study [J]. Language Learning & Technology, 2022, 26: 78-105.
- [4] Akanda F, Talukder T. AI writing tools in English writing: Reviewing teachers' and students' views on benefits and concerns[J]. Social Sciences & Humanities Open, 2026, 13: 102437.
- [5] Foreign Language and Literature Teaching Advisory Board of Institutions of Higher Education under the Ministry of Education. Guidelines for Teaching Foreign Language and Literature Majors in Regular Institutions of Higher Education (Guidelines for English Majors)[M]. Beijing: Foreign Language Teaching and Research Press, 2020.
- [6] Higher Education Department of the Ministry of Education. College English Curriculum Requirements[M]. Beijing: Foreign Language Teaching and Research Press, 2007.
- [7] Huang Wensi, Li Chenglin. A Correlational Study on College Students' English Proficiency and Their Learning Engagement with AI Feedback[J]. English Square (Academic Research), 2025(13): 113-116.
- [8] Li Hui. A Cognitive Study on Digital English Writing [M]. Beijing: Xinhua Publishing House, 2022.
- [9] Li Jiyan, Zhao Zhigang. Research on the Improvement of College English Teaching Quality under Digital Intelligence Empowerment [M]. Qinhuangdao: Yanshan University Press, 2024.
- [10] Zhao Jingjing. A Study on Artificial Intelligence Empowering the Development of College Students' Critical Thinking in English Writing[J]. Modern English, 2025(15): 68-70.