An Analysis of College Students' Motivation to Use ChatGPT for English Writing in a Teacher-Machine-Student Trinity Classroom Scenario

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Abstract: English writing is a necessary skill for college students, but it is also the weakest to improve English Writing Ability (EWA). Since ChatGPT became popular in the world in late 2022, there have been many controversies about applying it to English writing teaching, but there is a lack of experiments on it. In this paper, based on a practical study of ChatGPT-empowered college students' EWA conducted in a vocational university, authors analyze the motivation of college students to use ChatGPT for enhancing EWA through questionnaires and interviews. It was found that college students' purposes of using ChatGPT for English writing centered on improving the efficiency of writing composition, reducing the consumption of writing time, expanding writing ideas, perfecting the logical chain of writing, improving self-confidence in English learning, and increasing interest in English writing. Meanwhile, the experiment was conducted in a "teacher-machine-student" trinity model classroom with students-centered, which provides a reference for the future change of the teaching mode of college English writing.

Keywords: Artificial intelligence; ChatGPT, college English; English writing; Motivational analysis

1. Introduction

Given that AI is a driver of social change, how to scientifically and effectively integrate it into all aspects of people's daily lives has become the focus of discussion among experts and scholars from all walks of life. In particular, it is related to the field of education, and the prosperity of education is related to the prosperity of the country, so how to realize the synergistic progress of the two is undoubtedly the most challenging subject[1] . Although ChatGPT has been gradually introduced into English writing classroom teaching sessions, however, most of the classrooms are still dominated by teachers, mainly assisting them in preparing lessons, correcting assignments and other tasks, and it is very difficult for students to have the opportunity to have contact with and utilize ChatGPT [2]. On the other hand, most experiments try to apply tools such as grammarly and 1_checker to the learning of the post-writing, but the research on the motivation of college students' English writing by ChatGPT is still rare[3][4]. Moreover, the teaching mode of English writing is still dominated by the traditional teacher-oriented class, and students often can only passively memorize. Although the classroom teaching process has been enriched with the help of various teaching software, it only changes the teaching way, but does not improve the classroom teaching mode.

Based on a four-week teaching experiment carried out in a vocational university, the author explores in depth the motivation of college students to use ChatGPT to improve EWA in a "student-oriented" and "teacher-machine-student" trinity model classroom. This paper will conduct an in-depth profiling study using questionnaire and interview methods to provide constructive suggestions and support for the analysis of college students' motivation to use ChatGPT for improving EWA.

2. Literature review

The teacher-machine-student trinity model classroom is a teaching method that combines teachers, students and AI technology in

order to provide a personalized and interactive learning experience. In this teaching environment, teachers can provide personalized instruction based on students' learning characteristics and needs through AI technology, while students can learn and practice independently through AI tools. This model has the potential to increase student engagement, self-centered learning and knowledge construction[5].

The application of interactive AI in English writing teaching has made some progress. Interactive AI can provide real-time correction of writing errors, as well as provide students with immediate feedback and suggestions, which can increase students' engagement and self-confidence in the writing process, thus stimulating their motivation to write[6].

College students' motivation in English writing is influenced by a variety of factors. In previous studies, students' interests, self-efficacy, writing beliefs, external incentives, and academic requirements have been identified as important factors influencing motivation in English writing. Understanding college students' motivation to use interactive AI for English writing in a teacher-machine-student ternary classroom setting is important to be explored, which can optimize instructional design and improve learning outcomes.[7][8].

3. Study design

3.1 Study design

The motivation analysis is based on a practical study of the English Writing Ability (EWA) of undergraduates at a vocational university. The researchers carried out a questionnaire analysis of 361 randomly selected students. Based on the findings from the questionnaire survey, the experiment implemented a "student-centered" and "teacher-machine-student" trinity model classroom, and utilized essay questions from the IELTS Academic Writing Task 2. From the 361 students, thirty sophomores—averaging 20 years old, and 90 score in the college entrance examination—were chosen. With the guidance of teachers, ChatGPT was used to support the teaching process of pre-writing, while-writing and post-writing. The experiment last for four weeks. Subsequent to the experiment, the author conducted a questionnaire survey with 30 participating students. Simultaneously, 10 undergraduates are selected with in-depth interviews who participated in the experiment.

3.2 Data collection and analysis methods

3.2.1 Questionnaire method

Based on the research questions and in conjunction with the technology acceptance theory, the Questionnaire on the Status Quo of English Writing of ChatGPT-Empowered Vocational Undergraduates and the Questionnaire on the Behavioral Motivation of Vocational Undergraduates in Using ChatGPT are compiled.

3.2.2 Interview method

At the end of the experiment, 10 subjects are randomly selected to conduct interviews with students online. At the same time, the following open-ended questions are designed and utilized to stimulate the interviewees' thinking and encourage them to describe their opinions, experiences and feelings in detail. The outline of the interview is shown in Table 1.

Table1. INTERVIEW OUTLINE.

Element	Dimensionality
Basic information about the respondents	Phase of Studying and Information Literacy
Effectiveness of educational activities	Feelings of participating in the experiment
Students' Purposes and Attitudes Toward Using ChatGPT	Feeling of using ChatGPT
	Purpose of use of ChatGPT
	The Effect of ChatGPT on English Writing Skills
	Usage Scenarios of ChatGPT
	ChatGPT's Attitude Toward Learning

4. Data analysis

According to IBM SPSS 25 analysis, the questionnaire according to the sample size of 361 and 30, the number of items is 11 and 8, and the value of Cronbach's alpha coefficient is 0.799 and 0.769, which preliminarily determines that the measurement tool used has high reliability and stability. Therefore, this questionnaire is highly reliable. Meanwhile, the KMO values were 0.76 and 0.724, so the validity of this questionnaire was high.

4.1 Analysis of questionnaire data

4.1.1 Basic information

According to the data from the pre-experiment questionnaire, nearly 70% of the students had known and used AI, and used it almost every day. The average duration of daily use is 1.5 hours, and the main purposes are searching for learning materials, making personalized learning plans, exploring hobbies and killing time . In particular, college students rely on completing assignments such as writing, speeches and creating presentation slides. In applying ChatGPT to English writing, college students use ChatGPT mainly to find spelling mistakes, improve grammar, and refine the logical chain of writing, and less than 30% of them want to improve their critical thinking and broaden their horizons by communicating with ChatGPT.

According to the data from the questionnaire at the end of the experiment, 30 people said that ChatGPT has improved their EWA, especially in writing idea and logic. 96% of the students in this experiment thought that ChatGPT had a positive effect on their English writing improvement. When using ChatGPT, nearly 80% of the students felt novelty about it, and a small number of students expressed concern about it.

4.1.2 Practicality

Most of the respondents indicated that while using ChatGPT for the purpose of personalizing their learning requirements and enhancing their personal motivation and interest in learning, ChatGPT also optimizes the learning outcomes, such as: a deeper understanding of the point of view, more flexible word usage, and varied grammatical styles in writing English essays, as well as speeding up the progress of the learning tasks.

Respondents agreed that "optimization of learning outcomes" was the most popular, with an average score of 4.48 out of 5. This indicates that the majority of respondents strongly believe that AI ChatGPT has significant advantages in optimizing learning outcomes.

4.1.3 Technical characteristics

36% of the students chose the option of "providing more flexible and efficient learning channels". This is reflected in the fact that learners carry out learning activities anytime, anywhere through AI platforms, which are no longer bound by time and space, thus greatly enhancing the convenience of learning. At the same time, these platforms customize learning assistance and resources to deepen the personalization of the learner experience.

However, although these platforms have expanded access to learning resources (38%), traditional learning methods have greater relevance when it comes to specific domains or in-depth learning, and therefore cannot completely replace traditional learning models.

While these platforms stimulate users' interest and motivation to learn (10% of the total), learners may face greater learning stress and challenges in an environment that lacks instructor guidance and feedback.

4.1.4 Adopting attitudes

60% respondents are favorable, optimistic and full of expectations for application of ChatGPT in teaching English subjects for undergraduates, while 34% of the respondents held an intermediate position, fully evaluating the benefits brought about by the development of the technology while keeping a high degree of vigilance against the potential worries that might be triggered by it, and 4% respondents are firmly of the view that ChatGPT might cause a series of negative impacts. This shows that the majority of students maintain a fairly positive outlook on the future application of AI in the field of English language teaching in colleges and universities, and are convinced that it will lead to a series of positive reforms and in-depth impacts.

4.2 Analysis of interview data

4.2.1 ChatGPT's experience of use

The results of the interviews showed that student S3 reported more gains not only in learning how to use ChatGPT correctly i.e. giving the right instructions in order to get more accurate information as well as in areas such as AIGC techniques.

Viewing ChatGPT as a convenient search engine tool certainly stimulated interest in English writing as well as expanded the knowledge base of the English writing program (S1). As Student S6 said, "ChatGPT enables us to study the key points of knowledge of the subject in depth, so that we can acquire a richer and deeper body of knowledge. For example, we can understand the underlying logic and logic chain of writing ideas at a deeper level, enriching our thinking patterns, and no longer have a shallow understanding that prevents us from continuing to compose later content after writing ideas." In addition, student S4 expressed that while fully realizing the powerful functions of ChatGPT, this also triggered them to think deeply about social ethics and morality, and that people should not overly rely on ChatGPT, which tends to have a negative impact on people's comprehensive ability. At the same time, as the voice audio and visual video generated by using ChatGPT are likely to be used by unscrupulous people to carry out illegal activities such as fraud and crime, which will lead to a wide range of social hazards.

Therefore, students must be actively guided on how to properly utilize ChatGPT as a powerful tool for learning and creativity, and in doing so, they must always be reminded to abide by social norms and all legal requirements.

4.2.2 Purpose of using ChatGPT for English writing

The main purposes of university students using ChatGPT for English writing include improving writing efficiency, improving grammar and spelling errors, getting writing advice and improving overall writing quality. Also, some use the ChatGPT tool to expand their vocabulary, improve sentence structure and logic (S1, S2, S4, S7, S8, S9 and S10). The remaining respondents indicated that it was a good aid to language learning and acquisition. Through the ChatGPT assisted writing tool, we can not only learn about the application of grammar rules, but also learn about different expressions, vocabulary collocations, and sentence structures. All these help to enhance our language expression skills.

Students S3 and S5 indicated that the synonym replacement and sentence structure improvement provided by ChatGPT also made writing more efficient and fluent. In addition, ChatGPT provided writing style and tone suggestions for the target audience.

As to whether it has stimulated students' interest in writing, except for S4, who thought that English writing is a basic skill necessary for college students and there is no question of whether it is interesting or not, the rest of the students interviewed said that writing with ChatGPT has also stimulated their interest in writing to some extent and it is no longer as boring as it was before, as the respondents said that communicating with ChatGPT will gain unexpected views and ideas .

4.2.3 The Effect of ChatGPT on English Writing Skills

ChatGPT can provide relevant material on the appropriate topic, guiding students to thoroughly understand the topic and express their thoughts in a clear, organized manner (S5). In the process of interacting with ChatGPT, students were also able to think more broadly, as evidenced most notably by improved critical thinking (S6). By interacting with ChatGPT, students were able to compare and analyze different viewpoints to better understand and grasp the nature of things (S8). After the viewpoints have been clarified, ChatGPT can help students better organize their thinking by understanding the logical relationships in the text and finding the underlying issues, which in turn becomes easier in terms of setting out a clear logical structure (S9).

Second, ChatGPT can provide a large number of vocabulary resources including synonyms, antonyms, etc. through natural language processing technology to help students select and use vocabulary more accurately (S1). It helps students flexibly utilize the rich vocabulary in different topics and scenarios, thus improving the richness and accuracy of writing vocabulary (S2).

Finally, in terms of grammar, and also this is the most notable purpose for college students to use ChatGPT for writing, ChatGPT provides guidance on syntactic structures and sentence connections. In writing, students often need to utilize diverse syntactic structures and effective sentence connections in order to make richer and more varied sentences while maintaining logical coherence (S4).

4.2.4 Scenarios for the use of ChatGPT

Students S2, S3 and S5 indicated that ChatGPT will play a more important role in English writing at university.ChatGPT writing assistance will become smarter and more personalized, providing more precise assistance and advice based on a student's learning background, writing habits, and language ability. This means that students will be able to better customize their writing instruction.

Meanwhile, the future ChatGPT writing tool may be able to better understand students' writing intentions and give more tailored suggestions and revisions through deep learning and natural language processing technologies. This will greatly improve the efficiency and quality of students' writing (Students S8 and S10).

With the development of virtual reality and augmented reality technologies, virtual writing instruction and guided writing practice based on ChatGPT may emerge to help students better understand writing theories and improve their actual writing skills through immersive experiences (S1, S6, and S7).

4.2.5 Attitudes of ChatGPT used for learning

Students S7 and S9 indicated that English writing is a very important skill for college students and should be focused on developing it because it can help college students succeed in their academic, professional and personal lives.ChatGPT in college English writing is a useful aid. It can help students check problems such as grammatical errors, spelling mistakes and sentence structure more quickly and accurately by providing some writing suggestions and guidance (S10).ChatGPT can help college students expand their vocabulary by providing suggestions for suitable synonyms and word substitutions.

In addition, ChatGPT can help us improve sentence fluency and logic, and provide suggestions for essay structure and organization. These features can provide useful guidance when writing and help students improve the quality of their writing (S1, S2, and S8). At the same time, some students were concerned that relying exclusively on ChatGPT might diminish their creativity and uniqueness, as writing is not only about correctness, but also about the ability to express one's thoughts and opinions (S7). An over-reliance on these tools may lead to a decrease in students' writing literacy. The use of ChatGPT should be a process that aids and enhances writing skills, not a complete dependence. Proper use of ChatGPT with teacher guidance will help students improve their writing literacy.

Finally, all the students interviewed indicated that they would like to use ChatGPT in their college English writing courses. it can provide students with more feedback and guidance, and help them improve their writing. Understanding the use of artificial intelligence such as ChatGPT also helps us to better adapt to the needs of modern technological development. At the same time, schools and educational institutions need to pay more attention to the development and application of AI such as ChatGPT in the field of education, and they also need to strengthen the protection of AI such as ChatGPT in terms of personal privacy and data security.

5. Conclusion and discussion

5.1 Conclusion

This study found that college students' motivation towards using ChatGPT for English writing in a teacher-machine-student ternary classroom scenario focused on the following areas:

5.1.1 Improve writing efficiency and shorten time consumption; with the immediate feedback and guidance provided by ChatGPT in real time, students are able to complete their writing tasks faster and reduce the time spent on thinking and revising during the writing process, thus completing their work more efficiently.

5.1.2 Improving the quality of writing, which encompasses grammar, vocabulary use, and chapter structure.

5.1.3 Boosting self-confidence. Utilizing the assistance of ChatGPT to stimulate enthusiasm and motivation for English writing, ChatGPT's real-time feedback and suggestions can help students gain a deeper understanding of their own writing problems and room for improvement, thus boosting confidence and motivation. At the same time, students can gradually develop interest and initiative in English writing through interaction with the tool.

5.2 Discussion

Educators can apply AI writing tools, such as interactive ChatGPT, to develop more targeted writing teaching strategies and provide appropriate guidance and resources according to students' needs. Second, schools and educational institutions should encourage students to actively use interactive AI writing tools and provide complementary training and support to enhance students' writing skills and learning effectiveness. However, while interactive AI can be a powerful aid, students still need to maintain their ability to think independently and express themselves creatively, and educators should guide students in the proper use of the tools and work to develop their autonomy and critical thinking skills in their teaching. During this experiment, the frequency of student-teacher communication decreased, making it difficult for teachers to fully grasp the students' learning status.

Secondly, in the process of essay writing, students no longer seek solutions from teachers when they encounter problems, but tend to ask ChatGPT, and if they are involved in knowledge blind spots, students will have difficulty in distinguishing the credibility of the information [9]. Meanwhile, some students suffer from phenomena such as distraction, and during the process of using interactive AI writing tools, some students may be affected by other distractions such as pop-up advertisements on their personal computers, making it difficult for them to maintain sufficient concentration. This may cause them to ignore or miss important instructions and feedback, thus limiting their ability to fully utilize the potential of this tool.

Therefore, in the next research and practice, it is necessary to consider the above issues comprehensively and seek a balance point to ensure that interactive AI writing tools can be efficiently utilized while also ensuring adequate teacher-student interaction, precise knowledge guidance, and attention management in order to enhance the efficacy and quality of students' learning [10].

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