



The Impact of AIGC on Critical Thinking Disposition and Motivation Levels in Scriptwriting Courses

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Abstract. This study examines the influence of Artificial Intelligence Generated Content (AIGC) on Critical Thinking Disposition (CTD) and motivation levels in micro-film scriptwriting courses. The research explores both the opportunities AIGC presents for enhancing creativity and efficiency and the challenges it poses, such as authenticity concerns, ethical dilemmas, and potential job displacement. Utilizing a quasi-experimental pretest-posttest design, the study employs statistical analyses to evaluate the impact of AIGC on students' CTD and varying motivation levels—intrinsic motivation, extrinsic motivation, and amotivation. The findings underscore the significant effects of AIGC on critical thinking and motivation, suggesting that tailored educational strategies are necessary to effectively integrate AI technologies in scriptwriting education. These insights are crucial for understanding how to harness AI to promote critical thinking and accommodate the diverse motivational profiles of learners.

Keywords: AIGC; Critical Thinking Disposition; Learning Motivation; Scriptwriting Education.

1 Introduction

1.1 Background

The integration of AIGC in educational settings, particularly in creative disciplines such as scriptwriting, is rapidly transforming traditional pedagogical approaches. As AIGC technologies evolve, they bring forth both opportunities and challenges that can significantly affect educational outcomes, especially in developing critical thinking skills. Critical thinking, recognized for its importance in both academic success and career readiness, involves the ability to analyze, evaluate, and generate new ideas or solutions.

Recent studies have highlighted the potential of AIGC to enhance the learning experience by providing personalized content, thereby fostering greater engagement and improving learning outcomes [1] [2]. However, the deployment of AIGC also raises concerns about the authenticity of the learning process and the potential displacement of traditional educational roles.

Moreover, the interaction between students' motivation levels—whether intrinsic, extrinsic, or amotivation—and their engagement with AIGC tools is a critical factor in determining the effectiveness of these technologies in enhancing critical thinking dispositions [3]. Understanding how these motivational factors mediate the relationship between AIGC use and critical thinking outcomes is essential for designing educational interventions that effectively leverage AI technologies.

This study aims to explore the impact of AIGC on critical thinking disposition in scriptwriting courses, taking into account the effects of student motivation. By examining the nuances of this interaction, the research seeks to provide insights into how AIGC can be optimally integrated into educational settings to enhance critical thinking skills while addressing the challenges posed by these advanced technologies.

1.2 Current Research on AIGC in Creative Writing Education

Current research in the field of creative writing education has increasingly focused on integrating Artificial Intelligence Generated Content (AIGC) tools. This surge in interest reflects broader educational trends aimed at leveraging technology to enhance creative processes and outcomes. A critical review by Harper (2021) delves into the use of AIGC tools, suggesting that a well-defined educational philosophy is essential for effectively integrating new technologies [4]. Kim (2020) highlights the evolution of creative writing programs in Korean universities and calls for more systematic research and operational frameworks to enhance the educational effectiveness of creative writing, potentially through the integration of AIGC tools [5]. However, a study by Ippolito et al. (2022) notes significant challenges in maintaining authorial voice and style when using these tools, suggesting a gap that future research and technology development must address [6].

1.3 Importance and Impact of Critical Thinking and Learning Motivations in Education

Critical thinking involves the ability to think clearly and rationally, understanding the logical connection between ideas. It is essential for the analysis of information and making informed decisions. According to Lorencová et al. (2019), effective critical thinking instruction in teacher education programs is influenced by a blend of personal, methodological, and contextual factors, including students' motivation and learning styles [7]. Fajari et al. (2020) also highlight the significant correlation between learning motivation and critical thinking skills in elementary students, suggesting that higher motivation leads to better critical thinking abilities. This relationship underscores the need for motivational strategies in critical thinking education [8].

2 Theoretical Framework

Constructivist Learning Theory posits that learners construct knowledge through active engagement with their environment. In scriptwriting courses, AIGC provides interactive scenarios that challenge students to think critically and creatively, enhancing their understanding of narrative construction [9].

Cognitive Load Theory highlights the importance of managing working memory in learning processes. AIGC aids in reducing cognitive load by automating routine tasks, enabling students to focus on higher-order thinking skills essential for scriptwriting, such as critical analysis and narrative synthesis [10].

The Technology Acceptance Model (TAM) suggests that perceived usefulness and ease of use influence the adoption of new technologies. AIGC tools that are user-friendly and perceived as beneficial are more likely to be integrated into students' scriptwriting processes, positively impacting their learning and motivation [11].

Self-Determination Theory (SDT) emphasizes autonomy, competence, and relatedness as key to motivating students. AIGC supports these psychological needs by providing personalized learning experiences and adaptive feedback, which enhances student engagement and fosters critical thinking skills in scriptwriting [12].

AIGC tools facilitate the scriptwriting process by generating ideas, providing character development assistance, and structuring plots. This not only supports the development of critical thinking skills but also aligns with educational objectives for modern, technology-enhanced learning environments.

This framework underscores the integration of AIGC as a pedagogical tool in scriptwriting courses, highlighting its potential to enrich educational practices by facilitating deeper engagement with creative content and enhancing critical thinking skills.

3 Methodology

3.1 Research Design

This study employed a quantitative action research design to examine the impact of AIGC on critical thinking disposition and learning motivation in Digital Media Arts students at Shanghai Sanda University. The research was conducted over an 8-week period during the first semester of the 2023-2024 academic year, involving 40 undergraduate students from the Digital Media Arts program. These students were categorized based on different motivational levels: intrinsic motivation, extrinsic motivation, and amotivation. The main component of the study was a course focused on "Micro Film Script Writing," which consisted of four 45-minute classes each week. The experimental setup utilized AIGC tools to assist in various digital media arts tasks, with data being gathered through a pre-test and post-test using the Critical Thinking Disposition Inventory scales. This methodology enabled a structured investigation of how AIGC influences critical thinking capabilities among students specializing in digital media arts.

3.2 Research Instruments

The primary instrument used for data collection in this study was the Critical Thinking Disposition Inventory (CTDI), a robust tool developed from the foundational work of the American Philosophy Association’s Delphi Project. This inventory was utilized to measure the critical thinking dispositions of Digital Media Arts students participating in the study. In this study, the CTDI consists of 32 items, adapted from the original 33-item scale to better suit the context of this study and enhance response accuracy. This adjustment maintained the integrity of the assessment while making it more applicable to the student demographic. Each item on the inventory corresponds to one of the seven key dimensions of critical thinking disposition identified by the Delphi Project: truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and cognitive maturity. Participants were asked to respond to each item using a 5-point Likert scale, where 1 represents “strongly disagree” and 5 represents “strongly agree.” [13] This scaling allows for a nuanced capture of the students’ attitudes and dispositions towards critical thinking. Each subscale includes paired items — one positively and one negatively stated — to ensure a balanced measurement of each disposition and mitigate response bias.

The questionnaire was specifically designed to cover all dimensions thoroughly, ensuring a comprehensive evaluation of the students’ critical thinking dispositions. The distribution and design of the questionnaire items, detailed in Table 1 of the study documentation, provided a structured approach to assess how the use of AIGC tools influences critical thinking among Digital Media Arts students.

Table 1. The Questions Designed based on Critical Thinking Disposition Inventory

Scales	Questionnaire Design
Truth-Seeking	When using AIGC tools to assist in writing micro-film scripts, I find it easier to locate and understand authentic and accurate information.
	When using AIGC tools to assist in writing micro-film scripts, I find it easier to locate and understand genuine and accurate information.
	In the AIGC-assisted creation process, I find that I can objectively assess and honestly handle information and ideas.
	When using AIGC tools to help create, I find that I can better understand complex concepts and themes in the script.
Open Mindedness	In the process of using AIGC to assist in writing scripts, I focus more on obtaining information and inspiration from reliable and authoritative sources.
	In the process of using AIGC tools to help write micro-film scripts, I am more willing to consider and integrate different viewpoints and ideas.
	When using AIGC tools and encountering diverse views and ideas, I can tolerate and respect opinions that differ from mine.
Analyticity	If, during the scriptwriting process with AIGC tools, I encounter strong facts or evidence that contradicts my views, I am willing to change my views and adjust the plot.
	After using AIGC tools to assist in writing scripts, I can more easily envisage the risks and consequences of different plot settings in the script.
	With AIGC assistance, when I encounter complex script issues, I can more clearly state the reasons for the solutions.
	I can provide rigorous background for key contradictions or plots in the script.

Scales	Questionnaire Design
	When writing scripts with AIGC assistance, I feel that my thinking is more logical and clear.
	After using AIGC tools, I can more accurately assess the pros and cons of different script plots or concepts.
	I find it easier to combine observed elements with existing artistic theory and knowledge with the help of AIGC tools.
	When I write scripts with the assistance of AIGC, I can consider more different solutions.
	The process of writing scripts with AIGC tools prompts me to think deeply about and reflect on the basic concepts and knowledge of scriptwriting I understand.
Systematicity	After using AIGC tools to assist in writing scripts, I feel that my thinking and creative process is more organized and systematic.
	When using AIGC tools, I can focus more on solving the challenges in script creation.
	With AIGC assistance, I am more inclined to use a systematic inquiry method to find solutions to problems in creation.
	I find that when using AIGC tools to assist in writing scripts, I consider more carefully when faced with a lot of information and do not rush to conclusions.
CT Self-Confidence	After using AIGC tools to assist in writing scripts, I am more confident in my views and decisions.
	After using AIGC tools, I trust my logical reasoning and decision-making in script creation more.
	With AIGC assistance, I feel more capable of writing scripts that can be understood and recognized by actors and directors.
	In the process of writing scripts with AIGC assistance, I am more decisive when writing and setting plots at various stages of script creation.
	After using AIGC tools, I am proud of my ability to find solutions to problems encountered in script creation.
Inquisitiveness	Even if the micro-film scripts I write cannot be made into films, I remain highly enthusiastic about learning scriptwriting.
	I am excited and curious about learning new concepts and techniques that may be encountered in the process of learning to write scripts.
	After using AIGC tools to assist in writing scripts, even when faced with difficulties during the process of writing micro-film scripts, I do not avoid problems.
	When writing scripts with AIGC assistance, I am able to recognize the interconnections between different problems encountered in the script creation process.
Cognitive Maturity	When using AIGC tools, I understand more clearly that evaluating scripts or their elements requires clear standards and criteria. I know what a good script should look like.
	In the process of writing scripts with AIGC assistance, I can maintain calm and rational thinking when faced with challenges and problems.
	With AIGC assistance, I can better understand and respect the thought processes and viewpoints of each character in the script.

4 Data Analysis and Discussion

This section presents the results of the data analysis and provides a discussion of the findings regarding the impact of AIGC on CTD and motivation levels in scriptwriting courses. The primary statistical method used in this analysis was the paired samples t-test, which assessed whether there were significant differences between pre-test and

post-test scores of CTD. The paired samples t-test was conducted to compare the pre-test and post-test scores of CTD among students who used AIGC tools in their script-writing courses. The results are summarized in Table 2.

Table 2. Paired Samples T-Test for CT Disposition Pre-Test and Post-Test

	Mean	Std Dev	t-value	df	P	Cohen's d
CT Disposition						
Pretest	3.7	0.414				
Posttest	3.973	0.571				
Pretest-posttest Paired	-0.273	0.719	-2.4	39	0.021**	0.379

The mean CTD score increased from 3.7 (pre-test) to 3.973 (post-test) with a standard deviation of 0.414 and 0.571, respectively. The paired samples t-test indicated a significant difference between the pre-test and post-test scores ($t(39) = -2.4, p = 0.021$), suggesting that the use of AIGC tools significantly improved students' critical thinking disposition. The effect size, measured by Cohen's d, was found to be 0.379. This indicates a small but meaningful improvement in CTD due to the use of AIGC tools.

The significant increase in CTD scores demonstrates that AIGC tools effectively enhance critical thinking skills in scriptwriting courses. Despite the small effect size, the results are promising and suggest that integrating AIGC into educational practices can positively impact students' cognitive abilities. Further research should explore long-term effects and potential enhancements to AIGC integration strategies to maximize educational benefits.

In addition to assessing CTD, this study examined the impact of AIGC tools on different motivation levels—Intrinsic Motivation, Extrinsic Motivation, and Amotivation. The analysis compared pre-test and post-test results to identify changes in motivation levels following the intervention (Figure 1).

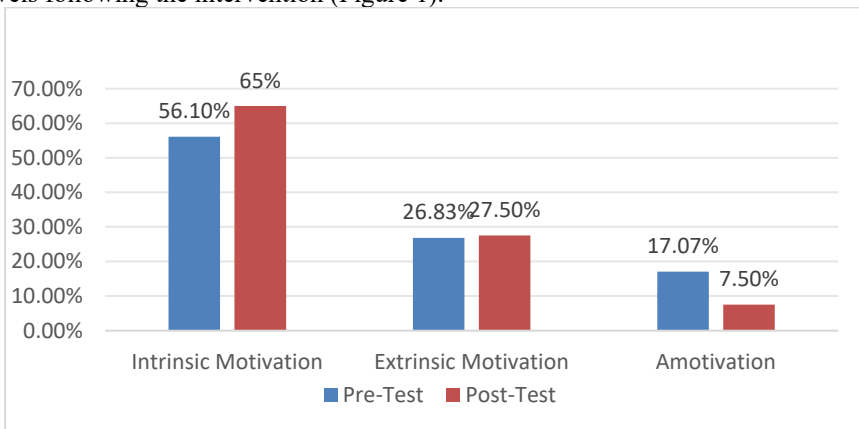


Fig. 1. Pre-Test and Post-Test Results of Different Motivation Levels

The analysis revealed significant changes in motivation levels after using AIGC tools. Intrinsic motivation increased from 56.10% (pre-test) to 65.00% (post-test), indicating that AIGC enhances students' internal drive and enjoyment in scriptwriting. Extrinsic motivation slightly increased from 26.83% to 27.50%, showing stability in external incentives with AIGC use. Amotivation decreased significantly from 17.07% to 7.50%, suggesting that AIGC tools effectively reduce feelings of helplessness and disengagement. These results demonstrate that AIGC tools positively impact students' motivation, particularly by boosting intrinsic motivation and reducing amotivation.

5 Conclusion

This study demonstrates that AIGC tools significantly enhance CTD and intrinsic motivation in scriptwriting courses. The use of AIGC tools not only improved students' critical thinking skills but also increased their enjoyment and engagement in the learning process, while reducing feelings of amotivation.

However, the study has several limitations. The sample size was limited to 40 students from a single university, which may affect the generalizability of the results. Additionally, the study duration was relatively short, only spanning eight weeks. Future research should consider larger, more diverse samples and longer study periods to validate these findings and explore long-term effects of AIGC on educational outcomes.

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