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RESEARCH TITLE

The Impact of Using AI-Enhancing Educational Drama on Creative Thinking Skills and Academic Achievement in English Among 12th-Grade Students in the Wadi Ara Region

Noran Suheil Mohammed Agbariyah[1], Dr. Walid Salameh[1], Dr. Raja Sawidan[1]

[1] An-Najah National University, Palestine.

Corresponding Author Email: nsj217@gmail.com

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Abstract

The integration of educational drama with advanced digital tools, particularly artificial intelligence (AI), has emerged as a promising approach to enhance learner engagement, creativity, and academic achievement. Educational drama provides a fertile ground for experiential learning, role-play, and meaning-making in authentic contexts. This study aimed to investigate the effect of an AI-supported drama-based instructional unit on the academic achievement in English among 12th-grade students in the Wadi Ara region. A mixed-methods approach, combining both qualitative and quantitative research within a quasi-experimental design, was applied. Data were collected using four tools, and two distinct non-probability sampling techniques were employed: convenience sampling for student participants (n = 56, equally divided into control and intervention groups), and purposive sampling for selecting the English teacher who taught both groups. The study found that academic achievement was higher in the intervention group (mean = 92.43) compared to the control group (mean = 90.75), though this difference was not statistically significant ($p = 0.324$). Correlation analysis indicated no significant relationship between creative IQ and academic achievement in both pre-test ($p = 0.554$) and post-test ($p = 0.124$). Qualitative findings demonstrated students' creative thinking through narrative reimagine, internal monologues, and podcast creation, alongside strong emotional expression during dramatizations. The teacher's facilitative role was essential in fostering a safe, student-centered environment by introducing open-ended challenges and allowing students to take ownership of the learning process. In conclusion, although the intervention group exhibited higher academic achievement, the lack of statistically significant correlations between creative intelligence and academic performance underscores the influential roles of gender and teacher support in cultivating creativity and learning.

Key Words: Achievement, AI in education, Creative thinking, Educational drama.

عنوان البحث

أثر استخدام الدراما التعليمية المعزَّزة بالذكاء الاصطناعي في تنمية مهارات التفكير الإبداعي والتحصيل الأكاديمي في اللغة الإنجليزية لدى طلبة الصف الثاني عشر في منطقة وادي عارة

المستخلص

أصبح دمج الدراما التعليمية مع الأدوات الرقمية المتقدمة، ولا سيما تقنيات الذكاء الاصطناعي، نهجًا واعدًا لتعزيز تفاعل المتعلمين، وتنمية الإبداع، وتحسين التحصيل الأكاديمي. وتُعد الدراما التعليمية بيئة خصبة للتعلم التجريبي، ولعب الأدوار، وبناء المعنى في سياقات واقعية. هدفت هذه الدراسة إلى تقصّي أثر وحدة تعليمية قائمة على الدراما المدعومة بالذكاء الاصطناعي في تحسين التحصيل الأكاديمي في اللغة الإنجليزية لدى طلبة الصف الثاني عشر في منطقة وادي عارة. اعتمدت الدراسة المنهج المختلط الذي يجمع بين الأساليب النوعية والكمّية ضمن تصميم شبه تجريبي. تم جمع البيانات باستخدام أربعة أدوات، كما استُخدمت طريقتان مختلفتان من أساليب المعاينة غير الاحتمالية: العيّنة المتيسّرة لطلبة الدراسة (n = 56) موزَّعين بالتساوي بين مجموعتي الضبط والتجريب(، والعيّنة القصدية لاختيار معلمة اللغة الإنجليزية التي قامت بتدريس المجموعتين. أظهرت النتائج أن متوسط التحصيل الأكاديمي لدى مجموعة التدخل كان أعلى (92.43) مقارنة بمجموعة الضبط (90.75)، إلا أن هذا الفارق لم يكن دالًا إحصائيًا (p = 0.324). كما أظهرت تحليلات الارتباط عدم وجود علاقة ذات دلالة إحصائية بين معامل الذكاء الإبداعي والتحصيل الأكاديمي في كلٍّ من الاختبار القبلي (p = 0.554) والبعدي (p = 0.124). وكشفت النتائج النوعية عن مظاهر متنوعة للتفكير الإبداعي لدى الطلبة، مثل إعادة تخيّل النصوص، والحوارات الداخلية، وإنتاج البودكاست، إلى جانب التعبير العاطفي القوي أثناء الأداء الدرامي. كما كان للدور التيسيري للمعلمة أثر جوهري في توفير بيئة آمنة تتمحور حول المتعلم، من خلال طرح تحديات مفتوحة ومنح الطلبة مساحة لامتلاك عملية التعلم. ختامًا، وعلى الرغم من ارتفاع التحصيل الأكاديمي لدى مجموعة التدخل، فإن غياب العلاقات الإحصائية الدالة بين الذكاء الإبداعي والأداء الأكاديمي يؤكد الأدوار المؤثرة لكلٍّ من الجنس ودعم المعلم في تنمية الإبداع والتعلم لدى الطلبة.

الكلمات المفتاحية: التحصيل، الذكاء الاصطناعي في التعليم، التفكير الإبداعي، الدراما التعليمية.

Introduction

The modern educational landscape is increasingly shaped by the integration of artificial intelligence (AI), which offers novel pedagogical tools to enhance learning processes (Holmes et al., 2019). Concurrently, drama-based pedagogy provides a robust framework for fostering creative expression, emotional engagement, and language acquisition through experiential learning (Neelands & Goode, 2015). The convergence of these two fields—AI and educational drama—presents a promising, yet underexplored, frontier for enhancing creative thinking and academic achievement in language learning. While traditional methods often struggle to cultivate higher-order thinking skills (Fadel et al., 2015), the use of AI-enhanced drama activities has the potential to create personalized, interactive, and immersive learning environments (Alam, 2023).

Despite this potential, a significant gap exists in the literature regarding the empirical effects of combining AI with educational drama, particularly within the context of English as a Foreign Language (EFL) instruction. This study addresses this gap by investigating the impact of an AI-supported drama-based instructional unit on the creative thinking skills and academic achievement of 12th-grade students in the Wadi Ara region. This area presents a unique demographic for examining how such innovative pedagogical approaches can be effectively implemented.

Research Objectives and Questions

The primary objectives of this study are:

1.To examine the impact of an AI-supported drama-based instructional unit on academic achievement in English.

2.To investigate the relationship between creative thinking skills (divergent and convergent) and academic achievement.

3.To explore the qualitative dimensions of student engagement, creative expression, and the teacher's role within an AI-enhanced drama environment.

These objectives are addressed through the following research questions:

•What is the impact of an AI-supported drama-based instructional unit on academic achievement in English among 12th-grade students in the Wadi Ara region?

•Is there a statistically significant correlation between students' creative thinking skills and their academic achievement before and after the intervention?

•How do students and teachers experience the integration of AI and educational drama in the classroom?

Theoretical Framework and Literature Review

This study is grounded in cognitive theories of learning, primarily Dual Coding Theory and Cognitive Load Theory. Dual Coding Theory posits that learning is optimized when information is presented through both verbal and non-verbal channels, a concept highly relevant to the multi-sensory experience of drama. AI-enhanced drama leverages this by combining linguistic content with the rich, multi-sensory experience of dramatic performance (Coyle et al., 2010). Cognitive Load Theory suggests that effective instruction must manage the cognitive demands placed on learners. By using AI to automate certain tasks or provide structured support, the cognitive load can be reduced, allowing students to allocate more mental resources to higher-order processes like creative thinking and problem-solving.

The literature indicates a growing interest in the role of AI in fostering creativity. AI tools can

support both divergent thinking (generating multiple ideas), a concept pioneered by Guilford (1950), and convergent thinking (refining ideas to find the best solution) by providing students with generative prompts, interactive storytelling platforms, and tools for creative writing (Yang & Evans, 2022). Similarly, educational drama has long been recognized for its capacity to develop empathy, collaboration, and communication skills (Kao & O'Neill, 1998). However, the synthesis of these two fields remains nascent, and this study contributes to the emerging body of research by providing empirical evidence on its effectiveness (Krishnan & Zaini, 2025).

Methodology

This study employed a mixed-methods, quasi-experimental design to provide a comprehensive analysis, a methodology well-suited for complex educational research (Creswell & Plano Clark, 2018). The quantitative component involved a pre-test/post-test comparison between an intervention group and a control group, while the qualitative component consisted of classroom observations to capture the nuances of the learning process.

Participants

The study included 56 12th-grade students from the Wadi Ara region, who were divided equally into an intervention group (n=28) and a control group (n=28) using convenience sampling. A single English teacher, selected via purposive sampling, taught both groups to minimize variability in teaching style. The use of non-probability sampling is a common feature in quasi-experimental designs where randomization is not feasible (Cohen et al., 2018).

Study Instruments

Four primary instruments were used for data collection:

1.Demographic Questionnaire: To gather background information on the student participants.

2.Evaluation of Potential Creativity (EPoC) Scale: To measure students' creative thinking skills. The EPoC is a validated instrument for assessing both divergent and convergent thinking in an educational context (Barbot et al., 2011).

3.Observational Methods: A structured observation protocol was used to document students' emotional and cognitive engagement, collaboration, and creative expression during the drama activities.

4.Academic Achievement Measure: Pre- and post-tests were administered to both groups to assess their academic achievement in the English unit being taught.

Data Analysis

Quantitative data were analyzed using SPSS. Descriptive statistics were used to summarize the data, while independent samples t-tests and correlation analyses were conducted to test the study's hypotheses. Qualitative data from classroom observations were transcribed and analyzed thematically using MAXQDA software, following principles of applied thematic analysis (Guest et al., 2012).

Results

The findings from both the quantitative and qualitative analyses provide a multi-faceted view of the intervention's impact.

Quantitative Findings

The intervention group demonstrated higher academic achievement (Mean = 92.43) compared to the control group (Mean = 90.75) on the post-test. However, this difference was not statistically significant ($p = 0.324$), indicating that the AI-enhanced drama unit did not produce a measurably superior academic outcome compared to traditional instruction within the study's timeframe.

Correlation analysis revealed no significant relationship between creative IQ (as measured by the EPoC scale) and academic achievement in either the pre-test ($p = 0.554$) or the post-test ($p = 0.124$). This suggests that creative thinking skills and academic performance may function as independent constructs within this context, a finding that aligns with research suggesting creativity in schools involves complex tensions and dilemmas (Craft, 2005).

Qualitative Findings

Thematic analysis of the classroom observations revealed strong evidence of student engagement and creative expression in the intervention group. Key themes included:

•Creative Expression and Narrative Reimagining: Students actively engaged in reinterpreting story elements, creating internal monologues for characters, and developing original content such as podcasts. This demonstrated a high level of creative thinking and ownership of the learning material.

•Emotional Engagement: The drama activities elicited strong emotional responses and expressions from students, indicating a deep connection with the content and characters, which is a known benefit of drama in education (Bresler, 2007).

•The Teacher as Facilitator: The teacher played a crucial role in fostering a safe and student-centered environment. By posing open-ended challenges and encouraging student autonomy, the teacher successfully guided the creative process without stifling it, reflecting a modern pedagogical approach where teacher knowledge is a framework for integrating technology and content (Mishra & Koehler, 2006).

Discussion

The findings present a complex picture of the role of AI-enhanced educational drama. The lack of a statistically significant improvement in academic achievement may suggest that such interventions require a longer duration to yield measurable academic gains or that the assessment tools used did not fully capture the learning that occurred. The non-significant correlation between creativity and academic achievement challenges the common assumption that one directly predicts the other and highlights the multifaceted nature of student learning (Kaufman & Beghetto, 2009).

The qualitative results, however, are highly encouraging. They demonstrate that the AI-enhanced drama environment was successful in fostering a rich, engaging, and creative learning experience. Students were not passive recipients of information but active creators of meaning, a central goal of both drama-based pedagogy and modern educational theory (Neelands & Goode, 2015). The teacher's facilitative role was paramount, underscoring that technology is most effective when guided by sound pedagogical practice. The findings align with Dual Coding Theory, as the multi-modal nature of the activities appeared to deepen student engagement and creative expression, even if it did not translate directly to higher test scores.

Conclusion and Recommendations

This study reveals that integrating AI with educational drama can create a vibrant and highly engaging learning environment that successfully nurtures students' creative thinking and emotional expression. While a direct, statistically significant impact on academic achievement was not found, the qualitative evidence strongly supports the value of this pedagogical approach.

Recommendations for Practice

•Integrate AI as a Creative Tool: Educators should explore using AI not just for information delivery, but as a tool to support creative tasks like scriptwriting, character development, and interactive storytelling (Yang & Evans, 2022).

•Emphasize the Teacher's Role as Facilitator: The success of technology-enhanced learning hinges on the teacher's ability to create a supportive, student-centered environment. Professional development should focus on these facilitative skills (Mishra & Koehler, 2006).

•Adopt a Holistic View of Assessment: Schools should consider assessment methods that go beyond traditional tests to capture skills like creativity, collaboration, and critical thinking, which are fostered by approaches like educational drama (OECD, 2019).

Limitations and Future Research

This study's limitations include its quasi-experimental design, the use of non-probability sampling, and its relatively short duration. Future research should employ randomized controlled trials over a longer period to more definitively assess the academic impact. Further studies could also explore the specific AI tools and drama techniques that are most effective for different learning objectives and student populations, contributing to the systematic review of AI applications in education (Zawacki-Richter et al., 2019).

Ultimately, the successful integration of AI in education depends not on the technology itself, but on the pedagogical wisdom with which it is applied. By using AI to enhance, rather than replace, human-centered approaches like educational drama, educators can unlock new possibilities for fostering creativity and deep learning (Holmes et al., 2019).

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