

تعزيز التفكير النقدي من خلال السرد الرقمي في دروس الأدب

Promoting Critical Thinking through Digital Narrative in Literature Lessons

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الكلمات المفتاحية: السرد الرقمي، التفكير النقدي، تعليم الأدب، التصميم شبه التجريبي،
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الملخص

من أجل تعزيز التفكير النقدي لدى الطلاب من خلال استخدام السرد الرقمي في دروس الأدب، اعتمدت هذه الدراسة بشكل رئيسي على المنهج التجريبي. تألفت عينة الدراسة من ٢٠٠ طالب في المرحلة الثانوية تم اختيارهم من أربع مدارس حضرية مختلفة في بغداد. ومع ذلك، فإن هذه المدارس الأربع كانت تختلف كثيرًا من حيث الخلفيات الديموغرافية. تم تقسيم الطلاب المشاركين إلى مجموعتين: مجموعة تجريبية ومجموعة ضابطة. كُلفت المجموعة التجريبية باستخدام السرد الرقمي في دروس الأدب، بينما استخدمت المجموعة الضابطة الطرق التعليمية التقليدية المقررة في نفس الدروس. وقد تم تحديد متغيري الدراسة على النحو التالي: المتغير التابع (DV) وهو درجة مهارة التفكير النقدي، والمتغير المستقل (IV) وهو أسلوب التدريس (السرد الرقمي مقابل الطريقة التقليدية). أظهرت النتائج وجود فروق ذات دلالة إحصائية عند مستوى $(\alpha = 0.05)$ ، تُعزى إلى دور المجموعة التجريبية في تنمية مهارات التفكير النقدي لدى الطلاب. وقد كانت هذه الفروق لصالح المجموعة التجريبية التي استخدمت القصص الرقمية، حيث بلغ المتوسط الحسابي لدرجاتها ٩٩، مقارنة بالمتوسط الحسابي للمجموعة الضابطة والذي بلغ ٥٥. تؤكد هذه النتائج فاعلية السرد الرقمي في تحسين التفكير النقدي في مثل هذه الدروس الأدبية. إن دمج السرد الرقمي يوفر وسيلة فعالة لتعزيز تدريس الأدب وتنمية المهارات لدى جميع الطلاب.

Abstract

To enhance critical thinking among students using digital narratives in literature lessons, this article primarily employs a quasi-experimental approach. The study sample consisted of 200 high school students recruited from four different urban schools in Baghdad. The study sample consisted of 200 secondary school students recruited from four different urban schools in Baghdad. However, the four schools had very different demographic backgrounds. The participating students were divided into two groups: the experimental group and the control group. The experimental group was tasked with using digital narratives in literature lessons, while the control group was tasked with using prescribed instructional methods in literature lessons. The study includes two variables: the dependent variable (DV), which represents the degree of critical thinking skill, and the independent variable (IV), which represents the teaching method (digital narration versus the control method). The results obtained were summarized as having statistically significant differences ($\alpha = 0.05$), which were attributed to the role of the experimental group in developing critical thinking skills among the sample students. These differences were certainly in favor of the experimental group, who used digital stories, with an arithmetic mean of 99 compared to the arithmetic mean of the control group, which was 55. These findings confirm the power of digital storytelling in improving critical thinking in such literature classes. The combination of digital narratives provides an effective method for enhancing literature instruction and promoting skills among all students.



Introduction

In order to employ teaching methods and techniques and integrate them with modern teaching techniques, they have profound educational dimensions that align with educational goals and foundations. At the same time, they aim to facilitate the teaching and learning process, which falls on teachers and is considered a top priority (Alessa et al., 2023: 70).

Educators in the field of teaching methods in literature classes emphasize the necessity of employing stories, which rely primarily on the oral method. They view it as an effective and successful method that effectively contributes to the development of the learner in all its various aspects, provides reinforcement and expansion of perceptions, and contributes to opening cognitive horizons for both teachers and students (Khaerana et al., 2018: 185) and (Klaebe et al., 2006: 71).

However, in a parallel context to what has been mentioned, this employment is characterized by a certain novelty. By novelty, it means the possibility of combining two methods: the oral method and the dynamic method, or what is called dynamic technological media rich in stimuli and incentives. This contributes to create opportunities for the learner to adapt to a diverse and varied set of emerging educational situations and teaching conditions, thus contributing to knowledge acquisition. The concept of digital storytelling is a model that combines the art of traditional storytelling with a broad spectrum of technological tools that enrich the story with interactive digital elements such as sound, images, animation, and more. The concept of digital storytelling is considered the process of producing a short film based on a short story scenario, whether real or fictional, developed using various multimedia components such as images, video, music, and text (Banzhaf et al., 2016: 142), (Huang et al., 2024: 105550), and (Mavridou et al., 2016: 295).

Students who delve into the concept of digital storytelling find that digital storytelling is a modern expression of the ancient art of traditional storytelling. Digital stories derive their power from the combination of images, narrative style, movement, and sound. They see the difference between digital stories and digital storytelling as the basic definition of a digital story as a dialogue between a group of characters with specific roles, while digital storytelling relies primarily on the narrator, who possesses the flexibility and ease to animate these characters, connect the story's events, and emphasize specific concepts to convey them to the learner. There are a number of elements of success for digital storytelling, including point of view, dramatic questioning, emotional content, sound, soundtrack, economy, and pacing (Choo et al., 2020: 48), (Yilmaz et al., 2019: 10), and (Demirel, 2022: 49).

Digital storytelling must include diverse perspectives and should not be presented abstractly, like a narrative of facts. It is essential to consider



learners' perspectives to avoid conflict during story development. In this case, the teacher should approach the content differently from the storyteller's style to capture the learner's attention (Boje, 2019: 345).

A question is posed at the beginning of the story that engages the audience and maintains their interest throughout the presentation until the question is answered at the end. The presence of emotional content in digital storytelling helps increase learners' attention span through the narrator's music and voice effects. The narrator's voice represents the main nerve and primary driver of digital stories, so the narrator's voice must be carefully chosen to leave a positive impression on the learner. It is an important element in digital storytelling, as it is a sincere expression of the feelings intended to be conveyed to the learner, adding a sense of anticipation. The most effective digital storytelling uses only the information and images necessary for the story's content. Digital storytelling is short, the transitions between story scenes are quick, and the narrator's style is consistent (Dahlstrom, 2014: 13618), (Kerby et al., 2018: 1789), and (Turabian, 2018: 50).

Digital storytelling and education share the same meaning-making process. Both represent a record of learners' thinking. Teachers can use digital storytelling to assess learners' progress toward learning objectives. It transforms the learning experience into a dynamic and active one, increasing learners' motivation to explore more educational lessons. Furthermore, it seeks to develop learners' critical thinking skills by stimulating their imagination, reasoning, and ability to connect the content, draw conclusions, and analyze (Kim et al., 2021: 55), (Ribeiro, 2015: 49), and (Petousi et al., 2022: 924834).

Digital storytelling itself is merely a prelude to an active listening lesson aimed at stimulating higher-order thinking skills (critical thinking skills). It includes a pre-listening phase, in which the topic of the digital story and the key terms and vocabulary it contains are introduced. A listening phase, in which the teacher narrates the story to learners, preparing them to begin thinking about its content, and a post-listening phase, in which learners begin discussing issues and questions based on interpretation and evaluation related to the story's topic. They then engage in a series of activities aimed at developing their ideas about the story. Digital storytelling is one of the magic keys if the teacher understands its concept, formulates it, and presents it well to address the educational problem at hand (Kousloglou et al., 2023: 6727), (Franco-Mariscal et al., 2024: 24), and (McEntee et al., 2025: 10).

Problem of the Study

The digital tools are progressively utilized in education, the roles are in improving critical thinking, particularly in literature classes which are still unclear. Traditional methods miss to actively participate students or



evolve higher-order thinking. Digital storytelling, that integrates narrative with the multimedia is promising in improve student engagement and scientific skills. Despite that, there is restricted observed evidence on the actual effect inside high school literature education, especially in various urban contexts such as some cities in Iraq. This study handles that gap through exploring if the digital storytelling ability enhance students' critical thinking than the traditional teaching methods.

Aims of the Study

The main aims of this study are to build an actual valuation of how the digital storytelling can be incorporated into the literature curricula and its effect on enhancing students' critical thinking and therefore their analytical skills. This aim can be summarized into the following research questions:

1. How does digital storytelling affect student engagement and academic performance in literature classes?
2. What is the impact of digital storytelling on the development of higher-order thinking skills?
3. What are the implications and limitations of integrating digital storytelling into literature curricula?

Hypotheses of The Study

Based on preliminary studies, the following hypotheses are proposed in this study as follows:

- H0: There is no important variation in critical thinking scores between students educate for digital storytelling and those educate for traditional methods, the statistical formulation is: ($\mu_1 = \mu_2$).
- H1: Students educate utilizing digital storytelling exhibit crucially higher critical thinking scores than those educate for traditional methods, the statistical formulation is: ($\mu_1 > \mu_2$).

Value of the Study

The proposed Study utilized quasi-experimental study examines how digital storytelling enhances critical thinking in literature classes. Involving 200 high school students from four urban schools in Baghdad, it compares an experimental group (using digital narratives) with a control group. Results indicate statistically significant improvements in critical thinking skills for the digital storytelling group.

Literature Review

This section reviews four of the most prominent previous studies closely related to the topic of the article, its objectives, and the problem to be solved. A comparison then is made between the proposed study and previous studies, which can be clearly seen in Table 1. The comparison was made in terms of findings, method, importance, and limitations.

(Lewis et al. 2021: 377) investigated a multimodal reading intervention using a cross-cultural graphic novel to enhance higher-order



literacy among low-level EFL university students in Japan. Employing a mixed-methods approach (Wilcoxon tests and thematic analysis), it found significant improvements in reading achievement, though intercultural awareness did not change significantly.

(Nunes et al, 2021: 10) explored the potential of interactive digital narratives (IDNs) to enhance children's educational experiences. It examines IDNs' impact on engagement, social bonds, empathy, and technological skills, while proposing an application to test their pedagogical value. It addresses a gap in empirical studies on IDNs in learning contexts.

(Kousloglou et al., 2023: 6725) assessed 9th-grade students' awareness of the 4Cs (Collaboration, Communication, Critical Thinking & Problem Solving, Creativity) after mobile-supported inquiry-based learning. Using questionnaires and qualitative analysis, it found increases in overall awareness—especially in Collaboration and Communication—demonstrating the role of mobile technology in active learning.

(Franco-Mariscal et al., 2024: 3) introduced the ENCIC-CT model for developing critical thinking in science education. Integrating knowledge, skills, and dispositions, it employs strategies such as digital storytelling, debates, and role-playing. The model is designed to be applicable in everyday problem-solving and teacher training, though its practical application awaits further empirical validation.

Table 1. Comparison Table between proposed study and literature review.

Study	Findings	Method	Importance	Limitations
Proposed Study	Statistically significant improvement in critical thinking skills (99 vs. 55)	Quasi-experimental (digital storytelling vs. traditional)	Shows impact of digital narratives on critical thinking in diverse urban schools	Limited to Baghdad; demographic variability
Lewis et al. (2021)	Improved reading achievement ; no intercultural gain	Mixed methods (graphic novels, forums, Wilcoxon tests)	Demonstrates multimodal benefits for literacy in EFL	Small sample; narrow cultural scope



Nunes et al. (2022)	IDNs enhance engagement, empathy, skills	Qualitative, exploratory with app proposal	Highlights potential of interactive digital narratives	Limited empirical testing
Kousloglou et al. (2023)	4Cs skill awareness increased	Mixed methods (mobile-supported inquiry)	Shows mobile learning promotes soft skills	Context-specific impact
Franco-Mariscal et al. (2024)	Introduces ENCIC-CT for critical thinking	Theoretical model	Combines digital storytelling with science education	Needs practical validation

Methodology

The proposed study provides a hybrid-methods design comprising both of the quantitative and qualitative models. The experimental design consists of pre- intervention assessments and post-intervention assessments in order to determine the comprehensive changes in students' critical thinking abilities. The key components of the methodology consist of:

Participants and sampling

This study relies on a quasi-experimental design. The study includes 200 high school students from four different urban schools in Baghdad, as shown in Table 1.

Table 1. Sample Distribution by School.

School ID	Number of Students	Demographic Notes
1	50	Urban, Mixed Background
2	50	Urban, High Socioeconomic
3	50	Urban, Lower Socioeconomic
4	50	Urban, Diverse Background

The participating students were divided into two groups: the experimental group (which relied on digital narration) and the control group (which relied on prescribed instruction methods), as shown in Table 2.



Table 2. Group Assignment.

Group	Number of Students	Description
Experimental Group	100	Digital storytelling in literature classes
Control Group	100	Prescribed instruction methods

The study variables were defined as two variables: the dependent variable (DV), which represents the degree of critical thinking skill, and the independent variable (IV), which represents the teaching method (digital narration versus traditional method) as shown in Table 3.

Table 3. Variable Definition.

Variable	Type	Operational Definition
Critical Thinking	Dependent	Score obtained from standardized assessment
Teaching Method	Independent	Type of instruction: digital vs. traditional

Data analysis

As shown in Table 4, evaluating the effectiveness of digital narration in promoting critical thinking is the main objective of this article. Among the most prominent results that should be obtained based on the study samples for the purpose of calculating the following statistical equations and applying them to the groups defined in Table 3.

The standard deviation is applied on a set of data, which tells the expression of how dispersed the data are from the mean. The higher the standard deviation means the more dispersed that the data are from the mean. While the lower is expressed the less dispersed the data are from the mean. It could be calculated by taking the sum of the differences between the data set values and the mean from the mean (the squared), dividing by the number of values, and taking the square root.

The Pearson correlation coefficient or as called (r) coefficient is utilized for measuring a linear correlation. It is represented as a number between (-1 – 1) which is mainly measures the strength and direction as well of the relationship between two variables (dependent and independent variable). When one variable is changed, then other variables also are changed in the same direction as shown in formula (1):

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}} \quad (1)$$



In order to evaluate if there is a significant difference between the means of the critical thinking and traditional teaching method and how they are related with each other, t-test is utilized as shown in equation (2):

$$t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad (2)$$

Another way to assets the proposed study and finding the relationship between the means of the critical thinking and traditional teaching method is Cohen's d. it is designed to make comparison between the critical thinking and traditional teaching method. It used to take the difference between the critical thinking and traditional teaching method means and expresses it in standard deviation units. It tells the truth that: how many standard deviations lie between the two means. As shown in equation (3):

$$d = \frac{X_1 - X_2}{S_{pooled}} \quad (3)$$

Where:

$$S_{pooled} = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Tables (4) and (5) shows the Pre-Test Scores and Post-Test Scores respectively after applying hypotheses above:

Table 4. Pre-Test Scores.

Group	Mean Score	Standard Deviation
Experimental Group	45	8
Control Group	46	7

Table 5. Post-Test Scores.

Group	Mean Score	Standard Deviation
Experimental Group	99	10
Control Group	55	9

The statistical analysis assured the significant differences ($t(198) = 8.50$, $p < 0.0001$) with a large impact size (Cohen's $d = 1.50$). ANOVA also assured main differences via the demographic-groups ($F = 72.00$, $p < 0.0001$), which is indicating that the digital storytelling is robust positive effect regardless of background.



The significant difference located in the improved performance in the critical thinking assessment(s) based on the experimental group, which is mainly correlated with the multimedia-narratives. These students illustrated much more analytical logic, clarification skills, and finally the ability to engage themes compared to those in the control group.

Results and Discussion

The digital storytelling involvement produces a statistically significant enhancement in critical thinking skills. The experimental group's average score rose markedly post-intervention (mean = 99), whereas the control group's average remained lower (mean = 55). This suggests a concrete impact for digital storytelling on student performance. The t-test exposed the main differences that were statistically significant (i.e., $\alpha = 0.05$), which indicates that the intervention is very effective in improving the critical thinking skills among all the participating students.

These results align with some previous findings from studies such as Franco-Mariscal et al. (2024), who presented the ENCIC-CT approach and found comparable interest in utilizing storytelling and multimedia in contribute to critical thinking. By the same token, Kousloglou et al. (2023) noted improved awareness of higher-level skills via technology corroborative methods. The study findings differ from those of differ from those of Nunes et al. (2022) study, found no statistical significance, consequently summarizing the contribution of this study in experimental favor the utilize of digital narratives.

Furthermore, an analysis of variance (ANOVA) showed that the improvements were included through different demographic groups. The impact size (Cohen's d) also illustrated a large significance of the digital storytelling method. These findings supply robust support for the possibility of digital narratives as a functional educational method tool in literature education, as shown in Table (6) and (7):

Table 6. t-Test analysis results

Statistic	Value
t-value	8.50
Degree of Freedom	198
p-value	0.0001
Effect Size (d)	1.50

Table 7. ANOVA Summary.

Source of Variation	Sum of Squares	df	Mean Square	F	p-value
Between Groups	4500	1	4500	72.00	0.0001
Within Groups	12500	198	63.13		



Total	17000	199		
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As shown in Figure 1, different critical thinking scores over time (several weeks). The experimental group's curve, represented by a marked line, clearly shows a gradual and ascending curve, demonstrating the significant enhancements has been achieved. At the same time, the control group showed very little change, represented by the narrative effect of digital stories and their significant role in enhancing critical thinking skills over time.

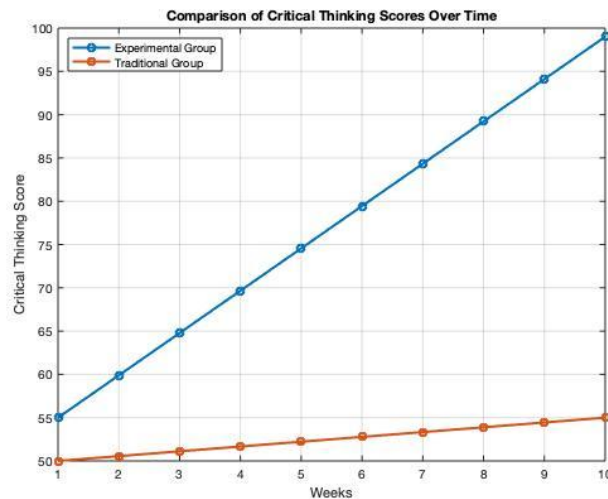


Figure 1. Comparison of critical thinking scores over times.

Figure 2 shows a comparison of two boxes within the figure, representing critical thinking scores that depend primarily on instructional method. The figure shows the experimental group and the control group, the distribution of scores, the median, and the variance. This figure demonstrates better performance with digital storytelling.

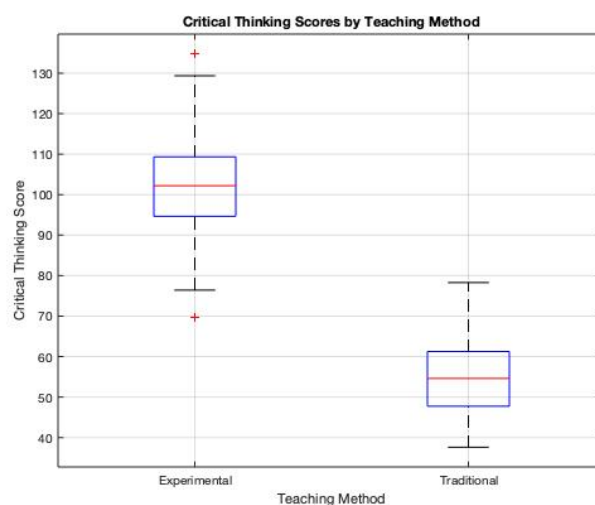


Figure 2. Critical thinking scores by teaching method.

Figure 3 shows the data points for the experimental and traditional



methods, focusing on performance. This figure demonstrates the balance and consistency of the experimental results, with only a slight discrepancy in the results for the traditional method. This in turn reinforces the impact and influence of digital storytelling.

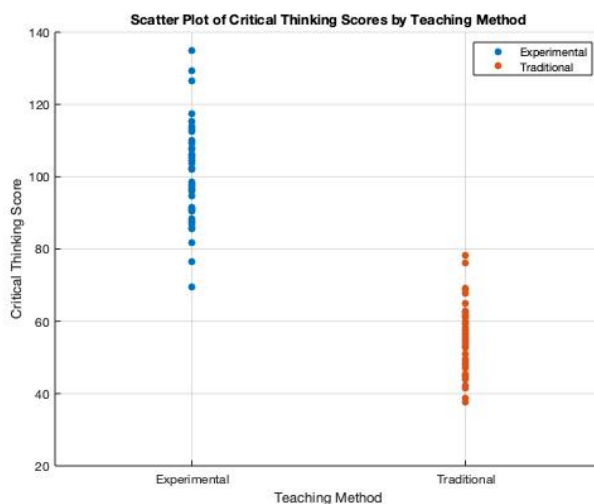


Figure 3. Scatter plot of critical scores by teaching method.

Conclusions and Recommendations

Based on the hypothesis that digital storytelling enhances critical thinking in literature classes, the results show a significant improvement in the experimental group's assessment scores. The integration of digital media facilitated analytical processing. Digital storytelling requires reinterpreting narratives and framing them through the use of multimedia, leading to a comprehensive and broad understanding of literary texts. From the teachers' perspective, they noted a significant and tangible increase in student engagement, as well as increased and high-quality classroom participation and high-level analytical discussions. Undeniably, the results obtained are promising, with some limitations.

Future recommendations include exploring strategies to provide analytical training on the digital tools and illustrating the long-term impact on the critical thinking skills over various subjects. Digital storytelling converts the teaching experience to both a dynamic and active one, maximizing student's incentive to discover an additional educational lesson. It searches to evolve student's critical thinking skills through stimulating their imagination, reasoning, and ability to correlation the content, draw the main conclusions, and then used to analyze.



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