ISSN: 1817-6798 (Print)
Journal of Tikrit University for Humanities
available online at: www.jtuh.org/

Using Digital Interactive Stories to Improve Vocabulary Skills and Creative Writing of Iraqi EFL Learners

Marwan Mizher Sahab

University of Tikrit College of Education for Humanities

* *Corresponding author: E-mail* :
marwanmizher@tu.edu.iq

Keywords:
Digital Interactive Stories,
Vocabulary Acquisition,
Creative Writing,
Iraqi Learners,
Technology-Enhanced

A R T I C L E I N F O

Article history:

Received	1 Mar. 2025
Received in revised form	25 Mar. 2025
Accepted	2 May. 2025
Final Proofreading	30 Nov. 2025
Available online	30 Nov. 2025

E-mail t-jtuh@tu.edu.iq

A B S T R A C T

This study explores how Digital Interactive Stories (DIS) can improve vocabulary skills and creative writing among EFL learners in Iraq. Conventional English teaching methods in Iraq concentrate on memorization and grammar, which often reduce the motivation of students and limit productive skills. DIS, which integrate multimedia and interactive elements, may offer a more engaging and effective alternative. The present study aims to find out the effect of using digital interactive stories on EFL university students' vocabulary skills; find out the effect of digital interactive stories on EFL university students creative writing components, specifically: a. Fluency (quantity of ideas and words). b. Flexibility (variety of ideas and vocabulary). c. Originality (novelty and uniqueness of ideas). d. Elaboration (detail and description) and find out the correlation between vocabulary skills and creative writing. To achieve these aims, two achievement tests are constructed—a vocabulary skills test and a creative writing test—administered to 60 third-stage students at the College of Education for Humanities, University of Tikrit, during the academic year 2024–2025. To ensure face validity, the tests are reviewed by a panel of specialists in linguistics and EFL teaching methodology, who confirmed their validity and suitability. A pilot study involving 20 randomly selected students reveal that the average time required to complete the test items was 50 minutes. The pilot also shows that most items were clear and easily understood by students. Regarding reliability, the test items are divided into two halves (odd and even). Using the Pearson correlation formula, the reliability coefficient is found to be **0.79**. After applying the Spearman-Brown formula, the reliability increases to **0.89**, indicating that the test is highly reliable and acceptable. Results indicate that digital interactive stories are significantly more effective than traditional teaching methods in improving both vocabulary and creative writing skills. In terms of vocabulary, the rich multimodal context—combining visuals, sound, and interactivity—led to deeper understanding and better long-term retention of new words. For creative writing, students demonstrate higher levels of creativity across all dimensions (fluency, flexibility, originality, and elaboration). The interactive nature of DIS stimulated students' imagination and helped them construct more coherent and dynamic narratives, resulting in more consistent and expressive storytelling

DOI: http://doi.org/10.25130/jtuh.32.11.2.2025.25

استخدام القصص التفاعلية الرقمية في تحسين مهارات المفردات والكتابة الإبداعية لدى متعلمي اللغة الإنجليزية بوصفها لغة أجنبية في العراق

مروان مزهر سحاب / جامعة تكريت/ كليه التربية للعلوم الإنسانية

الخلاصة:

تكشف هذه الدراسة كيفية تحسين القصص الرقمية التفاعلية لمهارات المفردات والكتابة الإبداعية لدى متعلمي اللغة الإنكليزية بوصفها لغة اجنبية في العراق. إن طرائق تدريس اللغة الإنجليزية التقليدية في العراق تركز غالبًا على الحفظ والقواعد، الأمر الذي يقلّل من دافعية الطلبة ويحدّ من مهاراتهم الإنتاجية. وفي المقابل، قد توفّر القصص الرقمية التفاعلية، التي تدمج الوسائط المتعددة والعناصر التفاعلية، بديلاً أكثر تشويقًا وفاعلية. تهدف هذه الدراسة إلى معرفة أثر استخدام القصص الرقمية التفاعلية في مهارات المفردات لدى طلبة المرحلة الجامعية من متعلمي اللغة الإنجليزية، وكذلك معرفة أثرها في عناصر الكتابة الإبداعية لدى الطلبة، وتحديدًا في الطلاقة (كم الأفكار وعدد الكلمات)، المرونة (تنوع الأفكار والمفردات)، الاصالة (جدة الأفكار وتفردها)، التفصيل (الشرح والوصف).
فضلاً عن ذلك، تهدف الدراسة إلى الكشف عن العلاقة الارتباطية بين مهارات المفردات والكتابة الإبداعية ولتحقيق هذه الأهداف، تم بناء اختبارين تحصيليين: أحدهما في مهارات المفردات والآخر في الكتابة الإبداعية، وقد طُبِّقا على 60 طالبًا من المرحلة الثالثة في كلية التربية للعلوم الإنسانية/جامعة تكريت خلال العام الدراسي 2024–2025 ولضمان الصدق الظاهري، عُرضت الاختبارات على لجنة من المتخصصين في اللسانيات وطرائق تدريس اللغة الإنجليزية، وقد أكدوا صلاحيتها وملاءمتها. كما أُجريت دراسة استطلاعية على عينة مكوّنة من 20 طالبًا مختارين عشوائيًا، كشفت أن متوسط الوقت المطلوب للإجابة عن فقرات الاختبار بلغ 50 دقيقة، وأظهرت كذلك أن معظم الفقرات كانت واضحة وسهلة الفهم بالنسبة للطلبة. أما فيما يتعلق بالثبات، فقد قُسِّمت فقرات الاختبار إلى نصفين (فقرات فردية وزوجية)، وباستخدام معامل ارتباط بيرسون بلغ معامل الثبات 0.79، وبعد تطبيق معادلة سبيرمان–براون ارتفع معامل الثبات إلى 0.89، مما يدل على أن الاختبار عالي الثبات ومقبول. تشير النتائج إلى أن القصص الرقمية التفاعلية أكثر فاعلية بشكل ملحوظ من طرائق التدريس التقليدية في تحسين كلٍّ من مهارات المفردات والكتابة الإبداعية. فعلى مستوى المفردات، أدّى السياق متعدد الوسائط — الذي يجمع بين الصور والصوت والتفاعل — إلى فهم أعمق واستبقاء طويل المدى للكلمات الجديدة. أما في الكتابة الإبداعية، فقد أظهر الطلاب مستويات أعلى من الإبداع في جميع الأبعاد (الطلاقة، المرونة، الأصالة، والتفصيل). كما حفّز الطابع التفاعلي للقصص خيال الطلبة وساعدهم في بناء سرديات أكثر ترابطًا وديناميكية، مما نتج عنه قصص أكثر اتساقًا وتعبيرًا.
.

الكلمات المفتاحية: القصص الرقمية التفاعلية؛ اكتساب المفردات؛ الكتابة الإبداعية؛ المتعلمون العراقيون، تعلم اللغة المدعومة بالتكنولوجيا

1.Introduction

English language proficiency is a crucial skill for academic and professional advancement in the globalized world. In Iraq, despite its importance, the teaching of English as a Foreign Language frequently faces important challenges. Traditional pedagogical approaches, heavily based on teacher-centered instruction, grammar-translation, and rote memorization of vocabulary lists, have proven insufficient in improving students' communicative competence (Al-Jarf, 2021). This often results in learners who may comprehend grammatical rules but struggle with practical language use, specifically in productive skills like speaking and writing.

Two parts that are particularly underdeveloped are vocabulary knowledge and creative writing. Vocabulary is the building block of language, yet Iraqi EFL learners usually have a passive knowledge of words without the ability to utilize them correctly in context. Creative writing, which necessitates not only linguistic accuracy but also imagination, coherence, and self-expression, is even more challenging within a system that rarely encourages creativity.

Digital Interactive Stories (Henceforth, DIS) appear as a promising technological intervention. DIS are narrative-based applications that mix text with interactive multimedia elements. Learners do not just read; they listen to narrations, view animations, click on objects to acquire new words, and sometimes make choices that affect the story's outcome. This study aims to explore the potential of DIS to transform the Iraqi EFL classroom by examining their impact on two critical areas: vocabulary skills and creative writing.

This study aims to:

1. Find out the effect of using digital interactive stories on EFL preparatory students' vocabulary skills.

2. Find out the effect of digital interactive stories on EFL preparatory students creative writing components, specifically:

a. Fluency (quantity of ideas and words).

b. Flexibility (variety of ideas and vocabulary).

c. Originality (novelty and uniqueness of ideas).

d. Elaboration (detail and description).

3. Find out the correlation between vocabulary skills and creative writing.

These aims are supposed to be achieved through verifying the following hypotheses:

1. There are no statistically significant differences between the mean scores of the experimental group which is taught using the digital interactive stories and that of the control group which is taught using the conventional method in vocabulary skills instruction posttest.

2. There are no statistically significant differences between the mean scores of the experimental and control groups in creative writing components, specifically:

a. Fluency (quantity of ideas and words).

b. Flexibility (variety of ideas and vocabulary).

c. Originality (novelty and uniqueness of ideas).

d. Elaboration (detail and description).

3. There is no correlation at the significance level of 0.05 between vocabulary skills and creative writing.

2. Literature Review

2.1. The Iraqi EFL Context and Its Challenges

Over the past few decades, the educational system in Iraq has confronted profound challenges over the past several decades, largely due to prolonged conflict, political instability, and international sanctions. These conditions have disrupted educational advancement and contributed to a continued reliance on outdated, teacher-centered methodologies. As Al-Mamouri, Mahdi, and Kareem (2020) observe, English language instruction in Iraq is mostly focused on examination, highlighting rote memorization, grammar rules, and translation activities, rather than communicative competence or student engagement. This focus on form over meaning limits students' chances to utilize English in meaningful contexts, thereby hindering the development of practical language skills.

This instructional approach also stands in stark contrast to established theories of second language acquisition. Krashen's (1985) Input Hypothesis points out that learners acquire language most efficiently when they are exposed

to *comprehensible input*—language that is slightly beyond their current level of understanding (i+1). However, in the current Iraqi context, learners infrequently encounter such input, as lessons are frequently decontextualized and lacking in authentic interaction. The absence of engaging and understandable language exposure significantly slows acquisition and reduces learners' confidence.

Consequently, students see English as a challenging and uninteresting subject. This perception is exacerbated by the stress of high-stakes exams and a lack of opportunities for meaningful language use, particularly in productive skills like writing. Writing in English, which requires creativity, organization, and a strong command of vocabulary and grammar, becomes an anxiety-inducing task. Learners often struggle with generating ideas and expressing themselves clearly, leading to low performance and a cycle of frustration and disengagement (Al-Mamouri et al., 2020). Therefore, there is a critical need to introduce innovative, communicative, and learner-centered strategies such as digital interactive storytelling that can increase motivation, reduce anxiety, and provide students with the comprehensible input necessary for language development.

2.2. Digital Interactive Stories in Language Learning

DIS indicates a dynamic and increasingly popular instrument in learning English foreign language, presenting learners a rich, immersive environment for improving linguistic skills. These narrative-based digital instruments are grounded in many well-established learning theories, most notably **Mayer's Cognitive Theory of Multimedia Learning** (2009), which points out that individuals learn more effectively from a combination of verbal and visual materials than from verbal information alone. According to Mayer (2009) and Paivio (1986), dual-channel processing—where learners simultaneously engage with both verbal (text or audio) and visual (images or animations) inputs improve cognitive processing by reducing extraneous load and promoting meaningful integration of new information. DIS, which often integrates written text, narrated dialogue, sound effects, and visual storytelling elements, exemplify this theory in practice. By stimulating multiple cognitive channels, students support deeper encoding and facilitate long-term memory retention.

In addition to cognitive theory, DIS are strongly aligned with **Task-Based Language Teaching (TBLT)**, a pedagogical framework that emphasizes

the use of authentic, goal-oriented tasks to promote language development. According to Gonzalez-Lloret and Ortega (2014), tasks in TBLT should involve real communication and meaningful use of language to achieve specific outcomes. In the context of DIS, these outcomes are often embedded within interactive narrative elements, such as decision-making branches, puzzles, or dialogues that require learner input. These interactions demand active engagement with language, moving learners beyond passive consumption of content toward active participation in the learning process. This aligns with Ellis's (2003) definition of a task as "a workplan that requires learners to process language pragmatically in order to achieve an outcome."

Furthermore, DIS foster **experiential and situated learning**, wherein learners acquire language in contextually rich, story-driven scenarios. This approach mirrors real-world communication more closely than decontextualized grammar drills or rote memorization. Through meaningful narrative involvement, learners practice not only linguistic forms but also sociolinguistic and pragmatic competence (Chapelle, 2003). The interactive nature of DIS also caters to **constructivist learning principles**, allowing learners to construct meaning through exploration, hypothesis-testing, and feedback—key elements in second language development (Vygotsky, 1978; Bruner, 1986).

Incorporating elements of **gamification**, such as rewards, branching paths, and user control, DIS also increase motivation and learner autonomy (Reinders & Wattana, 2015). This motivational boost can enhance persistence and engagement, especially among younger or digitally native learners who are accustomed to interactive digital environments.

Overall, DIS serve not only as a modern tool for content delivery but as a multifaceted pedagogical medium that integrates cognitive, sociocultural, and task-based approaches to language learning. Their capacity to engage learners cognitively, emotionally, and linguistically makes them a valuable asset in contemporary language education.

2.3. Digital Interactive Stories and Vocabulary Acquisition

Research consistently demonstrates the positive impact of **multimedia glossaries** on vocabulary acquisition in second language learning. Within the framework of **Digital Interactive Stories (DIS)**, these glossaries often take the form of clickable or tappable vocabulary items embedded within the narrative. When learners encounter an unfamiliar word, clicking on it can reveal a

combination of multimedia aids—such as images, audio pronunciations, and definitions—creating a **multimodal learning experience**. According to Yun (2011), learners who accessed multimedia annotations (including images and audio) showed significantly higher vocabulary gains compared to those who relied on text-only glosses or translations. This is consistent with Mayer's (2009) **Cognitive Theory of Multimedia Learning**, which highlights the advantages of engaging both verbal and visual cognitive channels in learning tasks. By receiving input through multiple modes, learners are better able to process and retain new lexical items.

Moreover, this multimodal input is particularly powerful when it occurs within a meaningful, narrative context—as is the case in DIS. Rather than learning words in isolation, learners encounter vocabulary as part of an unfolding story, which offers **semantic, syntactic, and situational context**. This contextualized exposure supports **incidental vocabulary learning**, a process in which learners acquire new words without explicit intention, simply through meaningful language use (Hulstijn, 2001). Several studies have shown that words encountered within coherent narrative contexts are more likely to be retained than those presented in word lists or isolated drills (Webb, 2008; Nation, 2001).

The integration of multimedia glossaries within DIS also aligns with **Dual Coding Theory** (Paivio, 1986), which posits that information encoded both verbally and visually creates stronger mental representations. For example, when a learner sees a word like *"apple"*, hears it pronounced, reads its definition, and sees an image of the fruit—all within the context of a character picking it from a tree—the multiple modes of input reinforce the word's meaning and form. This **redundancy** is not simply repetitive; it strategically reinforces learning by anchoring the new vocabulary in multiple memory pathways (Plass, Chun, Mayer, & Leutner, 2003).

In addition to aiding comprehension, multimedia glossaries in DIS can also promote **learner autonomy**. By allowing students to access definitions and supports on-demand, they can control their own learning pace and focus on words that are relevant or challenging to them personally. This interaction fosters a **more active and personalized vocabulary learning experience**, which has been linked to greater motivation and long-term retention (Stockwell, 2010; Godwin-Jones, 2018).

In sum, the use of multimedia glossaries in DIS supports vocabulary learning through multimodal reinforcement, contextualized exposure, and increased learner engagement. These features position DIS as highly effective tools for vocabulary development in both formal and informal language learning settings.

2.4. Digital Interactive Stories and Creative Writing

Creative writing is a complex and expressive skill that benefits from exposure to models, opportunities for practice, and a learning environment that encourages experimentation without fear of failure. **Digital Interactive Stories (DIS)** offer an innovative and highly engaging medium through which learners can develop their creative writing abilities. These interactive narratives present learners with rich examples of **narrative structure**, **character development**, **dialogue**, and **descriptive language**, all of which serve as implicit models for students to emulate in their own writing. By interacting with stories that unfold through user choices, learners not only observe how stories are constructed but also begin to understand the consequences of narrative decisions, such as changes in plot direction, tone, or character behavior (Smeda, Dakich, & Sharda, 2014).

Because DIS require **active participation**, rather than passive consumption, learners become co-creators of the story world. This form of **interactive storytelling** fosters deeper cognitive and emotional engagement with narrative elements, making literary devices and story conventions more memorable and meaningful. Exposure to such immersive stories can scaffold students' understanding of how stories are built—from setting and conflict to climax and resolution—and inspire them to transfer those structures into their own writing (Bruner, 1986; Kafai, 2006).

Furthermore, the interactive and often playful nature of DIS can **reduce writing anxiety** by lowering what Krashen (1985) refers to as the **affective filter**—a mental barrier that inhibits language acquisition when learners feel stressed, unmotivated, or self-conscious. Because DIS situate writing within a context of fun, exploration, and creativity, they make the task of writing feel less daunting. Learners are more likely to take creative risks and express themselves when the activity is framed within an enjoyable, low-pressure environment (Dörnyei & Ushioda, 2011).

The **narrative engagement** provided by DIS also naturally leads to **authentic creative writing tasks**. Students may be inspired to write **alternative endings**, develop **backstories for characters**, or create **parallel plots**. Such activities move learners from being passive readers to **active authors**, allowing them to internalize narrative conventions while practicing linguistic skills in a meaningful context. According to Hwang, Shih, Ma, Shadiev, and Chen (2016), students who engaged with interactive digital stories in an English as a Foreign Language (EFL) classroom demonstrated improved creativity, motivation, and writing fluency compared to those in traditional instruction settings.

Additionally, DIS often integrate **multimodal elements**—such as images, sounds, music, and animations—that provide **sensory and emotional cues** to stimulate imagination and enrich vocabulary. These sensory-rich environments can serve as creative prompts that help learners visualize and describe scenes with greater detail and accuracy (Walsh, 2010). In turn, this enhances their ability to generate vivid and expressive writing.

In summary, DIS function as both **models and motivators** for creative writing. By providing learners with access to well-constructed narratives, lowering psychological barriers, and fostering imaginative engagement, DIS offer a powerful tool for nurturing creativity, storytelling skills, and linguistic expression in second language learners.

3. Methodology

3.0. Introductory Notes

This section presents the procedures followed to fulfill the aims and verify the hypotheses of the current study. It focuses on the research design, population and sample selection. validating the instruments of the study test ascertaining its reliability and analyzing its items and administrating the constructed test.

3.1. Research Design

Vandalen (1979) points outs that research design is indicated as the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy and procedure. Bour (2018) shows that the research design sets the procedure for the required data, the methods to be applied to collect and analyze this data, and how all of this is going to answer the research question. On the other hand,

Research design is the plan, structure and strategy and investigation concaved so as to obtain ensured to search questions and control variance (Best and Khan, 2006). The design of this research is quantitative research. As the current study aims to know the effect of digital interactive stories of two variables based on statistical analysis.

3.2 Experimental Design

The experimental design is the proposal according to which the experimental group is selected. Cook (1967) and Vandalen (1979) add that the selection of a suitable experimental design for testing is one of the more useful decisions that a researcher would make. Best and Khan (2006) argue that the selection of an appropriate experimental design for testing the deduced consequences of the hypothesis is important for conducting a study. The experimental treatments are controlled and their effect is measured (Creswell, 2012). In the present study, Quasi- Experimental Design is Demanded, namely the design of a "Non-Randomized Control Group Pretest- Posttest Design", Thus, the two groups of the third-year university students are chosen. The experimental design of the study is illustrated in the following Table.

Table (1) *Experimental Design*

Groups	**Pretest**	**Independent Variable (Treatment)**	**Dependent Variable**	**Posttest**
Experimental Group	Students' achievement of vocabulary skills and creative writing	Digital interactive stories	vocabulary skills and creative writing	Students' achievement of vocabulary skills and creative writing
Control Group		Conventional Method		

3.3 Population and Sampling

The population is a set of all the units that possess the variable characteristics under study and for which the findings of research can be generalized (Shukla, 2020). The population of the current study consists of EFL third university students at the university of Tikrit / College of Education for

Humanities and College of Education for Women, during the academic year 2024-2025. The total population number of the students' is 361.

Lehmann and Mehrens (1971) define sample as a smaller number of elements selected from a population that is hopefully representative of that population. While Fry, et al (2000) define the sample as a subgroup of a population. College of Education for Humanities has been randomly selected to represent the sample of the current study. The total number of the third-year students at the College of Education for Humanities / Department of English is 100. The students are grouped into three sections: (A), (B) and (C). Each of section (A) and (B) includes of 30 students, while section (C) involves 40. Section (A) and (B) have been randomly selected as the control and experimental group, respectively. Their total number is 60 who represent 42% of its original population. For the purpose of the pilot study, 20 students from class (C) have been selected. The two involved groups have been equalized in their age, level of achievement in the previous year, their parents level of academic attainment and their level of achievement in the posttest.

3.4 Construction and Application of the Achievement Posttest

The **Achievement Posttest** in this study is constructed to provide a comprehensive measure of students' progress in academic English, focusing on both vocabulary knowledge and creative language use. It comprises two complementary components: one assessing **academic vocabulary and language skills** and the other evaluating **creative writing ability**. Together, these components aim to capture not only the students' grasp of formal academic registers but also their capacity to use language imaginatively and flexibly.

The achievement posttest is designed to assess students' academic vocabulary and language skills through four equally weighted questions (25 marks each, totaling 100 marks). **Question one** tests understanding of vocabulary meaning in context through multiple-choice questions. **Question two** evaluates the ability to complete sentences using appropriate academic words. **Question three** focuses on recognizing synonyms of academic terms, while **Section 4** identifies incorrect academic word usage in sentences. Each question contains five items worth 5 marks each. The test ensures a well-rounded evaluation of students' vocabulary knowledge, usage, and contextual understanding in academic English. (See Appendix A).

The Creative Writing Achievement Posttest on the other hand is designed to evaluate students' abilities across four key creative writing skills. In the fluency section, students must generate ten imaginative and varied ideas for what an old, rusty key might unlock, focusing on creativity and vocabulary. The flexibility section requires students to describe a storm from three different perspectives, showcasing their ability to shift tone, style, and point of view. For originality, students are asked to invent a new emotion that has no existing name in English, describing its trigger, physical sensation, and opposite, which encourages abstract and innovative thinking. Finally, in the elaboration section, students continue a given story starter with a detailed paragraph (150–200 words), using vivid sensory details, description, and dialogue to enrich the narrative and demonstrate storytelling skill. (See Appendix B).

The constructed tests have been validated, their reliability obtained and their items analyzed. They have been administrated at the end of the experiment, namely on Wednesday, 5th of May 2025. The posttests papers have been distributed to the involved subjects who have been informed about how to answer the test questions. After finishing the exam, the test papers are collected and scored in terms of the constructed scoring scheme.

3.5 Scoring Scheme of the Achievement Tests

Scoring scheme aims to make transparency by providing teachers with clear criteria to mark students' work (Claire et al, 2015:48). The present study consists of two tests. The first test is concerning with vocabulary skills, while the second is concerning with creative writing skill. The constructed vocabulary skills test includes five questions and scored out of one hundred. The **first** question includes five items, and scored out of twenty-five. Question **two** involves five items and scored of twenty-five. The **third** question includes five items and scored out of twenty-five and the **fourth** question contains five items and scored out of twenty-five.

The constructed creative writing test includes five questions and scored out of one hundred. This test is assessed in terms of five criteria namely; **vocabulary**, **grammar**, **spelling**, **punctuation marks** and **handwriting**. Each criterion is marked as; very good, good, or weak. Five marks are given for 'very good', four marks for 'good' and zero for 'weak'.

3.6 Final Administration of the Research Instruments

After being valid, reliable the study instruments are finally administered to the involved groups of students.

3.7 Final Administration of the Achievement Posttests

The experiment started on 2nd of March 2025 and ended on 30th of April 2024. It lasted for two months. Depending on the outcomes of the pilot administration which has approved that the tests are reliable and valid. They have been applied at the end of the experiment to the sample in the current study. The test is finished in 45 minutes and the students are instructed to read the questions carefully and then write down their answers on their papers. Papers are collected after they have finished their answers. The papers are corrected to know their performance after applying the experiment by a group of English teachers.

4. Analysis of Data and Discussion of Results

4.0 Introductory Note

This section is allocated to the statistical analysis of the collected data and the discussion of the results in order to verify the following hypotheses:

4.1 Comparison between the Mean Scores of the Experimental Group and that of Control Group in the Vocabulary Skills Posttest.

To find out if there is any significant difference between the mean scores of the experimental group and that of the control group in the posttest, all mean scores are obtained and compared. Statistics show that the mean score of the experimental group is (55.93) and that of the control group is (39.80). By using the t-test formula for two independents, the calculated t-value is found to be (4.342), while the tabulated t-value is found to be (2.00) at the degree of freedom (58) and level of significance (0.05). This means indicate that there is a significant difference between the performance of the two groups and in favour of the experimental group.

Thus, the first hypothesis which states that "*there are no statistically significant differences between the mean scores of the experimental group, which is taught using the digital interactive stories and that of the control group, which is taught using the conventional method in vocabulary skills instruction posttest*", is rejected, as shown in table (1).

Table (1)

Means, Standard Deviation, and t-Values of the Two Groups in the Vocabulary Skills Posttest

Groups	No. of students	Mean	SD.	T-Value		DF	Level of Significance
EG.	30	55.93	12.74	Calculated	Tabulated	58	0.05
CG.	30	39.80	15.86	4.342	2.00		

4.2 Comparison between the Mean Scores of the Experimental Group and that of Control Group in the Creative Writing Posttest.

To find out if there is any significant difference between the mean scores of the experimental group and that of the control group in the posttest, all mean scores are obtained and compared. Statistics show that the mean score of the experimental group is (63.43) and that of the control group is (36.30). By using the t-test formula for two independent, the calculated t-value is found to be (8.814), while the tabulated t-value is found to be (2.00) at the degree of freedom (58) and level of significance (0.05). This means indicate that there is a significant difference between the performance of the two groups and in favour of the experimental group.

Thus, the second hypothesis which states that "*there are no statistically significant differences between the mean scores of the experimental group, which is taught using the digital interactive stories and that of the control group, which is taught using the conventional method in creative writing posttest"*, is accepted, as shown in table (2).

Table (2)

Means, Standard Deviation, and t-Values of the Two Groups in the Creative Writing Posttest

Groups	No. of students	Mean	SD.	T-Value		DF	Level of Significance
EG.	30	63.43	8.37	Calculated	Tabulated	58	0.05
CG.	30	36.30	14.63	8.814	2.00		

4.3 Comparison between the mean scores of experimental group students at four components of Creative Writing

In order to achieve the third hypothesis of this study, which states, "*there are no statistically significant differences between the mean scores of the experimental group in creative writing components*", the one-way analysis of variance is used, as shown in the following table:

Table (3)

One-Way Analysis of Variance (ANOVA)

Groups	Sum of Squares	DF	Mean Square	F-value		Sig.
				Calculated	Tabulated	
Between Groups	28.025	3	9.342	0.682	2.68	Not Sig.
Within Groups	1588.567	116	13.695			
Total	1616.592	119				

The table (3) shows that the calculated F-value value (0.682) is lower than the tabulated F-
value (2.68) at the (0.05) level of significance and DF = 3, 116. This indicates that there are significant differences among four components of creative writing components at posttest.

Table (4)

Comparisons of Means among Four Components of Creative writing (Scheffe[a])

Groups	N	Subset for alpha = 0.05
		1
Elaboration	30	15.03
Flexibility	30	16.06
Originality	30	16.06
Fluency	30	16.26
Sig.		0.646
a. Uses Harmonic Mean Sample Size = 30.		

According to the table (4) above, the comparisons of means showed that the mean scores of the Elaboration skill is (15.03), Flexibility is (16.06), Originality is (16.06), and Fluency is (16.26) with harmonic mean sample size = 30. This means indicates that there is no significant difference among experimental groups students at four components of creative writing, thus the third hypothesis is accepted.

4.4 The Correlation between vocabulary skills and creative writing

In order to find the third hypothesis which states, "*there is no correlation at the significance level of 0.05 between vocabulary skills and creative writing* ". To verify the hypothesis, Pearson correlation coefficient is employed to assess the correlation between the two mentioned variables. Based on the results, it is shown that the r- value is (0.642) and the critical one (0.250) at a level of significance (0.05) and sample size (60). Therefore, this indicates that there is a positive correlation coefficient between vocabulary skills and creative writing, thus third hypothesis is rejected, as shown in Table (5).

Table (5)

The Correlation between Vocabulary Skills and Creative Writing

Sample Size	R- Value	Critical value	Significance 0.05
60	0.642	0.250	Sig.

4.5 Discussion of the Results

This study aimed to investigate the effectiveness of using digital interactive stories on the vocabulary skills and creative writing of EFL Iraqi learners. The statistical analysis of the posttest data yielded clear and compelling results, which are discussed in detail below in relation to the study's hypotheses.

The first major finding of this study concerns vocabulary skills. The analysis revealed a statistically significant difference between the mean scores of the experimental group (M = 55.93, SD = 12.74) and the control group (M = 39.80, SD = 15.86) in the vocabulary posttest. The calculated t-value (4.342) far exceeded the critical t-value (2.00) at a 0.05 significance level, leading to the rejection of the first null hypothesis. This result strongly suggests that the use of

digital interactive stories was significantly more effective than the conventional method in enhancing students' vocabulary knowledge. The multimedia-rich and contextualized nature of digital stories likely provided a more engaging and memorable learning experience. Learners were not merely memorizing word lists but encountering vocabulary within a meaningful narrative context, supported by visual, auditory, and interactive elements. This multimodal input appears to have facilitated deeper cognitive processing and better long-term retention of vocabulary, explaining the experimental group's superior performance.

The results for the creative writing posttest were even more pronounced. The experimental group (M = 63.43, SD = 8.37) dramatically outperformed the control group (M = 36.30, SD = 14.63). The exceptionally high calculated t-value (8.814) compared to the tabulated value (2.00) indicates a very strong significant difference, leading to the acceptance of the second hypothesis in its stated form (which, being a null hypothesis of "no difference," is rejected by this finding). This outcome underscores the profound impact of digital interactive stories on creative writing proficiency. Exposure to well-structured digital narratives likely served as a powerful model for students, enriching their understanding of story arcs, character development, and descriptive language. The interactive elements may have fostered a more active and imaginative engagement with the story content, which they were then able to transfer to their own writing. The lower standard deviation in the experimental group further suggests that this method was consistently effective across most students, creating a more uniform uplift in writing ability compared to the conventional method.

To delve deeper into the nature of the creative writing improvement, the performance of the experimental group was analyzed across four sub-components: Fluency, Flexibility, Originality, and Elaboration. The One-Way ANOVA results showed no statistically significant differences among the mean scores of these components (F-calculated = 0.682 < F-tabulated = 2.68). The Scheffé post-hoc test confirmed this, with the means clustering closely together (Elaboration: 15.03, Flexibility: 16.06, Originality: 16.06, Fluency: 16.26) and a high significance value (0.646).

This finding is crucial, as it indicates that the intervention did not develop one creative skill at the expense of another. Instead, the digital interactive stories fostered a balanced and harmonious development of creative

writing abilities. Students improved not only in generating many ideas (Fluency) but also in producing a variety of ideas (Flexibility), unique ideas (Originality), and richly detailed ideas (Elaboration) to a similar degree. This suggests that the holistic and immersive experience of the digital stories comprehensively stimulated diverse aspects of creativity.

Finally, the study investigated the relationship between the two main dependent variables. The Pearson correlation analysis revealed a strong positive and statistically significant relationship between vocabulary skills and creative writing ($r = 0.642$, $p < 0.05$). This correlation, which is higher than the critical value (0.250), led to the rejection of the third null hypothesis.

This result provides empirical support for the theoretical link between lexical knowledge and writing creativity. A rich and readily accessible vocabulary appears to be a fundamental enabler of creative expression. The learners who acquired a broader vocabulary through the digital stories were better equipped to articulate complex ideas, add descriptive details, and experiment with language in their writing. This finding reinforces the integrated nature of language skills and suggests that interventions targeting vocabulary through engaging, context-rich methods can have a powerful spill-over effect on higher-order skills like creative writing.

In conclusion, the results of this study collectively present a strong case for the integration of digital interactive stories in the EFL classroom. The method proved to be a highly effective tool for not only improving vocabulary but also for dramatically enhancing creative writing skills in a balanced and comprehensive manner, with a clear interdependence established between these two key areas of language learning.

5. Conclusions

According to the obtained results of the current study, the following points have been concluded:

1. Digital interactive stories are significantly more effective than traditional teaching methods in improving vocabulary acquisition and creative writing skills

2. Students using digital stories show superior vocabulary performance.

3. The context-rich, multimodal nature (visual, auditory, interactive) of digital stories enhanced understanding and retention.

4. Language presented in narrative contexts is more effective than rote memorization or isolated vocabulary drills.

5. Students exposed to digital stories demonstrate greater creativity in their writing.

6. Lower standard deviation indicate more consistent performance among students.

7. Digital stories serve as scaffolds for narrative structure, character development, and descriptive writing.

8. Interactive elements promote active narrative engagement, stimulating imagination.

9. Improvement is observed across all four creativity components; fluency, flexibility, originality and elaboration

10. A strong positive correlation is found between vocabulary knowledge and writing skills.

11. A broader vocabulary supports more expressive, sophisticated writing.

12. It highlights the importance of teaching vocabulary in meaningful, integrated contexts.

13. Digital storytelling creates an engaging, immersive, and student-centered learning environment.

14. It supports a shift toward interactive, multimodal, and context-driven strategies in EFL education.

15. It is particularly effective for learners in contexts similar to those of Iraqi EFL students.

References

Al-Jarf, R. (2021). Effectiveness of e-storytelling in improving Saudi EFL students' vocabulary. *Journal of Education and Practice, 12*(5), 1–10.

Al-Mamouri, L. K., Mahdi, H. S., & Kareem, A. A. (2020). The challenges of teaching English language in Iraq: A study from teachers' perspective. *International Journal of Innovation, Creativity and Change, 13*(10), 1–15.

Al-Mamouri, O. M., Mahdi, H. S., & Kareem, A. A. (2020). Problems of teaching English in Iraqi schools: A critical review. *International Journal of Innovation, Creativity and Change, 12*(3), 1–10.

Best, J. W., & Khan, J. V. (2006). *Research in education* (10th ed.). Pearson Education, Inc.

Bour, M. J. (2018). A rough guide to language awareness. *English Teaching Forum, 1*, 12–21.

Bruner, J. (1986). *Actual minds, possible worlds*. Harvard University Press.

Chapelle, C. A. (2003). *English language learning and technology: Lectures on applied linguistics in the age of information and communication technology*. John Benjamins.

Cook, D. R. (1967). *A guide to educational research* (3rd ed.). United States of America.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (pp. 375–382). Pearson.

Dörnyei, Z., & Ushioda, E. (2011). *Teaching and researching motivation* (2nd ed.). Routledge.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.

Godwin-Jones, R. (2018). Using mobile technology to develop language skills and cultural understanding. *Language Learning & Technology, 22*(3), 2–11.

Gonzalez-Lloret, M., & Ortega, L. (2014). *Technology-mediated TBLT: Researching technology and tasks*. John Benjamins Publishing Company.

Hulstijn, J. H. (2001). Intentional and incidental second-language vocabulary learning: A reappraisal of elaboration, rehearsal and automaticity. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 258–286). Cambridge University Press.

Hwang, G.-J., Shih, J.-L., Ma, Z.-H., Shadiev, R., & Chen, C.-Y. (2016). Evaluating the role of digital storytelling in language learning: A study based on the creative process of EFL students. *Interactive Learning Environments, 24*(4), 1–14.

Hwang, W. Y., Shadiev, R., Kuo, T. C., & Chen, N. S. (2016). Effects of storytelling to facilitate EFL speaking using web-based multimedia system. *Computer Assisted Language Learning, 29*(2), 215–241.

Kafai, Y. B. (2006). Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and Culture, 1*(1), 36–40.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Longman.

Lehman, I., & Mehrens, A. (1971). *Educational research reading in focus*. American Winston, Inc.

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.

Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford University Press.

Plass, J. L., Chun, D. M., Mayer, R. E., & Leutner, D. (2003). Cognitive load in reading a foreign language text with multimedia aids and the influence of verbal and spatial abilities. *Computers in Human Behavior, 19*(2), 221–243.

Reinders, H., & Wattana, S. (2015). Affect and willingness to communicate in digital game-based learning. *System, 50*, 99–109.

Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the classrooms: A comprehensive study. *Smart Learning Environments, 1*(6).

Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology, 14*(2), 95–110.

Vandalen, D. B. (1979). *Understanding educational research* (4th ed.). McGraw-Hill.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Walsh, M. (2010). Multimodal literacy: What does it mean for classroom practice? *Australian Journal of Language and Literacy, 33*(3), 211–239.

Webb, S. (2008). Receptive and productive vocabulary sizes of L2 learners. *Studies in Second Language Acquisition, 30*(1), 79–95.

Yun, J. (2011). The effects of hypertext glosses on L2 vocabulary acquisition: A meta-analysis. *Computer Assisted Language Learning, 24*(1), 39–58.

Yun, X. (2011). The effects of multimedia annotations on L2 vocabulary immediate recall and reading comprehension: A meta-analysis. *Language Learning & Technology, 15*(2), 72–86.

(Appendix A)

Vocabulary Skills Achievement Test

Question 1: Multiple Choice – Academic Vocabulary Meaning (25 Marks)

Choose the best definition of the underlined word:

1. The professor emphasized the need for *critical* thinking in analyzing literary texts.

A. Negative
B. Important
C. Fault-finding
D. **Analytica**

2. The results of the study were *inconsistent* with the original hypothesis.

A. Similar
B. Contradictory
C. Supportive
D. Predictable

3. The students were asked to *formulate* their own research questions before beginning the project.

A. Memorize
B. Copy
C. Create
D. Avoid

4. The article provides a *comprehensive* overview of feminist literary theory.

A. Superficial
B. Complete
C. Biased
D. Outdated

5. The speaker used several *examples* to *clarify* her argument.

A. Confuse
B. Strengthen
C. Explain
D. Repeat

Question 2: Word in Context – Sentence Completion (25 Marks)

Fill in the blank with the most suitable academic word:

1. The researcher was careful to avoid personal bias and aimed to remain _____ throughout the study.

A. subjective
B. emotional
C. objective
D. informal

2. The findings of the study were not _____ with the expected results, leading to a reevaluation of the original hypothesis.

A. consistent
B. identical
C. resistant
D. reflective

3. In her presentation, the student attempted to _____ the complex theory by using real-life examples.

A. complicate
B. eliminate
C. clarify
D. misinterpret

4. The committee will _____ the effectiveness of the new curriculum after one academic year.

A. assume
B. evaluate
C. recommend
D. ignore

5. The concept of cultural identity was central to the author's _____ of the novel.

A. decoration
B. translation
C. interpretation
D. imagination

Question 3: Synonym Recognition – Academic Register (25 Marks)

Which of the following is closest in meaning to the word "allocate" as used in academic texts?

1. Which of the following is closest in meaning to the word "*allocate*" as used in academic texts?

A. Combine
B. Assign
C. Collect
D. Predict

2. Which word is closest in meaning to "*enhance*" in an academic context?

A. Reduce
B. Limit
C. Improve
D. Copy

3. Choose the synonym for the word "*justify*" as used in essays or reports:

A. Defend
B. Ignore
C. Repeat
D. Reject

4. What is the closest synonym to "*significant*" in research writing?

A. Large
B. Meaningful
C. Strange
D. Beautiful

5. Choose the word that best matches the meaning of "*assume*" in academic language:

A. Prove
B. Guess
C. Take for granted
D. Examine

Question 4: Word Usage – Error Identification (25 Marks)

Which sentence contains an incorrect use of an academic word?

1.

A. The theory was widely accepted by scholars in the field.
B. She interpreted the results based on statistical evidence.
C. The students were assumed to complete the readings before class.
D. The paper was transformed with relevant citations.

2.

A. The article evaluates the economic impact of globalization.
B. The professor summarized the chapter using visual aids.
C. The research aims to navigate the causes of climate change.
D. The conclusion restates the main findings of the study.

3.

A. The participants were instructed to respond anonymously.
B. The study demonstrates a clear correlation between the two variables.
C. The author compiled various sources to fabricate a comprehensive review.
D. The data was organized into meaningful categories.

4.

A. The researchers attempted to replicate the original experiment.
B. The results contradicted the hypothesis posed at the beginning.
C. The policy was implemented to encourage environmental damage.
D. The model provides a framework for analyzing behavior.

5.

A. The textbook defines all key concepts in the first chapter.
B. The participants were notified via email about the schedule.
C. The author manipulated data to support the hypothesis.
D. The student summarized the novel in a very academic way.

(Appendix B)

Creative Writing Achievement Test

Question 1: Fluency (Quantity of Ideas and Vocabulary) (25 Marks)
You find a single, old, rusty key on the sidewalk. Write **ten different, distinct possibilities** for what this key might unlock. Your goal is to generate a high quantity of diverse ideas and use varied, descriptive vocabulary.

Question 2: Flexibility (Ability to Shift Perspectives) (25 Marks)
Describe a "storm" from **three completely different perspectives**. Each description should be 2-4 sentences and reflect a unique point of view.

Question 3: Originality (Uniqueness of Ideas) (25 Marks)
Invent a **new emotion** that does not currently have a name in the English language. Describe this emotion in a short paragraph by answering these questions:

- What is the feeling? What triggers it?
- How does it feel physically? (e.g., a cold warmth, a weightless heaviness)
- What is its opposite emotion?

Question 4: Elaboration (Ability to Develop and Embellish Ideas) (25 Marks)
Read the following story starter. Continue the narrative by writing a **detailed paragraph (150-200 words)**. Focus on enriching the story with sensory details (sight, sound, smell, touch, taste), dialogue, and descriptive language to bring the scene to life.

Story Starter:
"The map was definitely wrong, but that was the least of Elara's problems. The bridge she was supposed to cross wasn't just collapsed; it was gone, as if it had never been there at all. And the trees on the other side of the ravine seemed to be whispering her name...