Content list available at http://ijltr.urmia.ac.ir

Iranian Journal of Language Teaching Research

ORIGINAL ARTICLE

Urmia University

Digital Storytelling and EFL Learners` Vocabulary Knowledge Development

Mahsa Mohammadpour Yaghiny [a], Sima Modirkhameneh [a, *]

[a] *Urmia University, Iran*

ABSTRACT

Digital storytelling (DST) has been proven to be an effective technology-driven approach in enhancing learning outcomes, from writing skills to critical thinking, in various contexts. However, its effectiveness and widespread implementation in EFL contexts—particularly in developing countries—require further investigation. This mixed-methods study aimed to fill this gap by examining the short- and long-term effects of DST tasks on the receptive and productive vocabulary knowledge of EFL learners. The quantitative section utilized a pre-test, post-test, and delayed post-test design to assess vocabulary acquisition, and semi-structured interviews explored participants' perceptions of DST qualitatively. In this quasi-experimental study, 125 participants were assigned to either an experimental group (n=53) or a control group (n=72). After pre-testing and homogenization, the experimental group created digital stories, while the control group was taught the words using conventional methods without any extra out-of-class activities. Post-test results revealed a significant improvement in both receptive and productive vocabulary knowledge for the experimental group. The delayed post-test further confirmed the long-term retention of vocabulary. Interviews highlighted participants' enthusiasm for DST, noting its benefits not only for vocabulary learning but also for writing, listening comprehension, and pronunciation— despite the challenges encountered during task execution. The findings advocate for integrating DST into EFL instruction, as it enhances learning outcomes and engages learners.

Keywords: digital storytelling; receptive vocabulary knowledge; productive vocabulary knowledge

ARTICLE HISTORY

Received: 1 Aug. 2024 **Revised version received:** 21 Jan. 2026

Accepted: 10 June 2026 **Available online:** 31 July 2026

* Corresponding author: Department of English Language and Literature, Urmia University, Urmia, Iran
Email address: s.modir@urmia.ac.ir

doi 10.30466/ijltr.2026.57374.3409

Introduction

The concept of DST was first introduced by Lambert at the Center for Digital Storytelling (CDS) in California (Rahimi & Yadollahi, 2017). Also referred to as digital documentaries, digital essays, computer-based narratives, interactive storytelling, and electronic memoirs, DST is defined variably depending on the context and purpose (Kristiawan, Ferdiansyah, & Picard, 2022). Lambert (2013) defines DST simply as the act of sharing a story through images, text, voice, music, sound effects, video, and animation. In educational settings, DST is operationalized as a technology-mediated instructional approach where learners create short, multimedia narratives (typically 2–5 minutes) by combining spoken/written text, images, audio, and video to convey a coherent message or story (Lambert, 2013; Robin, 2008).

Digital storytelling encompasses three primary genres. Personal narratives are autobiographical stories where learners share first-person experiences, emotions, or reflections, often structured around pivotal life events (Lambert, 2013; Ohler, 2013). DST on historical events reconstructs past occurrences through researched facts, primary sources, and contextual details (Robin, 2008; Kristiawan et al., 2022), requiring learners to synthesize information, employ chronological sequencing, and integrate archival visuals (e.g., maps, period images) to enhance cultural or temporal understanding. Instructional DST explains concepts, processes, or procedures through clear, structured explanations (Kearney, 2013; Yang & Wu, 2012), combining voiceover with diagrams, animations, or labeled visuals to reinforce target vocabulary or ideas. This genre prioritizes logical organization, present-tense exposition, and accuracy.

Theoretically, DST is grounded in constructivist learning theory (Jonassen et al., 1999), which posits that learners actively construct knowledge through meaningful, multimodal creation, and Mayer's (2003) Cognitive Theory of Multimedia Learning, which emphasizes that dual coding (visual + auditory input) enhances comprehension and retention. DST also aligns with the narrative paradigm (Raffone, 2020), recognizing storytelling as a fundamental human cognitive tool for organizing and communicating experiences. Operationally, DST in this study refers to a structured pedagogical task where EFL learners script a 2–3-minute narrative using target vocabulary, combine recorded voiceovers with images/videos using accessible tools (e.g., PowerPoint, Moviemaker), and share stories digitally (e.g., via WhatsApp) for peer/instructor feedback. This process integrates Nation's (2008) four strands of vocabulary learning: input, output, focus, and fluency, while measuring outcomes through both receptive and productive vocabulary assessments (Laufer & Nation, 1995).

Receptive vocabulary knowledge refers to the ability to recognize and comprehend words when encountered in listening or reading contexts, reflecting passive understanding without active production (Nation, 2001; Schmitt, 2010). It is typically measured through tasks like multiple-choice questions, matching exercises, or contextual inference. In contrast, productive vocabulary knowledge denotes the ability to retrieve and use words accurately in speaking or writing, requiring active recall and contextual application (Laufer & Nation, 1995; Webb, 2020). Productive mastery is assessed via sentence construction, cloze tests, or oral storytelling, where learners demonstrate lexical precision, collocational accuracy, and grammatical integration. While receptive knowledge precedes productive mastery in language acquisition (Nation, 2008), both are essential for communicative competence, with productive use representing deeper, more autonomous word ownership (Swain, 1995). In this study, receptive knowledge was operationalized through word-recognition tests, while productive knowledge was evaluated via fill-in-the-blank tests that used target vocabulary.

Educators have increasingly incorporated DST into curricula to utilize its potential for enhancing language acquisition, although this implementation has not been without challenges. Limited access to technological resources or devices, insufficient educator training in utilizing the approach, and

learners' lack of technical skills are some of these obstacles to implementation (Beck & Neil, 2021). Additionally, concerns about device addiction during story creation exist, though these can be mitigated through proper task design and theoretical grounding.

In the process of language learning, vocabulary acquisition poses a major challenge for EFL learners (Hampp, Kumayas, & Lengkoan, 2021). Despite its importance, vocabulary is often neglected in syllabi because it is treated as a self-acquired skill that can be mastered while learning other skills, such as reading a text or doing an exercise. However, learners frequently make vocabulary-related errors, underscoring the need for explicit instruction (Segler, 2011).

Since successful language learning is related to a person's proficiency in all four language skills, i.e., listening, speaking, reading, and writing, and this proficiency is highly correlated with vocabulary knowledge (Waring & Nation, 2004), improving both receptive and productive vocabulary knowledge is crucial. This study advocates for DST as a technology-driven task in EFL instruction, particularly for vocabulary acquisition, to achieve this goal.

Review of Literature

Research has extensively documented the role of digital storytelling (DST) in language acquisition and vocabulary development (Schmoelz, 2018; Rodríguez, García-Jiménez, Massó-Guijarro, & Cruz-González, 2021). The novelty and engagement inherent in DST have been shown to increase motivation in language learning, including vocabulary acquisition (Sembiring & Simajuntak, 2023). Moreover, embedding new words in visual and narrative contexts makes learning more tangible and memorable (Kristiawan et al., 2022). Multiple studies highlight DST's facilitative role in English vocabulary learning (Abdul-Ameer, 2014; Kegenhof, Cutrim Schmid, & Whyte, 2014), particularly through interactive, technology-integrated experiences (Sarica & Usluel, 2016).

Despite technological advancements in developing countries like Iran, few studies have explored DST's application for both receptive and productive vocabulary in higher education, especially in public universities. While most students possess smartphones, these devices are often used aimlessly rather than as pedagogical tools. This study addresses this gap by examining DST's effectiveness in vocabulary learning and learners' perceptions of the approach.

DST in Iranian Contexts

Limited research exists on DST's impact on vocabulary in Iran. Abdul-Ameer (2014) investigated DST's effects on primary school students' vocabulary knowledge, finding positive outcomes not only for vocabulary but also for other language skills. The study attributed these benefits to DST's motivational appeal, opportunities for repeated exposure, and immediate feedback.

Similarly, Tajeri, Syal, and Marzban (2017) studied postgraduate students, analyzing pre-/post-test results alongside questionnaires, reflection logs, and interviews. Their findings confirmed DST's benefits for vocabulary development, writing skills, and learner engagement.

Gashti (2021) investigated the impact of storytelling and cooperative learning on Iranian EFL learners` vocabulary achievement. He divided the 70 participants into three groups: storytelling, cooperative, and mixed. The learners in the cooperative group followed the procedures of cooperative learning for reading short stories; the short story group was engaged in a question-and-answer activity, and the mixed group covered the short stories extensively out of the class, as described for the short story group, and did the cooperative group work activity in class. The findings indicated that using storytelling can be an excellent strategy to deal with the difficulty of

vocabulary instruction, as it gives learners opportunities to use new words communicatively and produce target forms in meaningful real-world contexts.

Probing the effects of EFL students' self-made digital stories on their vocabulary learning in an Iranian context, Nami and Asadnia (2024), in a mixed-methods study, assigned their participants to make the stories collaboratively. Using pre-/post-treatment vocabulary tests, collective reflection journals, weblog comments, and interviews as data collection tools, they found positive effects of DST tasks on vocabulary knowledge. The findings further demonstrated that DST empowers students to integrate vocabulary learning into immediate daily contexts, experience peer-promoted vocabulary learning, contextualize vocabulary in multimodal stories, personalize the vocabulary knowledge development process, and enhance cognitive-affective engagement with stories to learn new words. The students also found that DST was not a stand-alone pedagogical approach and recommended using animated, game-based, and social media-based tasks to facilitate vocabulary learning.

Challenges and Limitations

Some studies have also focused on the potential obstacles and drawbacks associated with integrating DST tasks in EFL instruction. In one of these studies, Amelia, Zainol Abidin, & Saibon (2019) conducted a qualitative case study in Malaysia to investigate the benefits and drawbacks of using a tablet-based DST application on the ESL learners` vocabulary learning. Using interviews and observations, they taught the participants new words by showing them digital stories on their tablets. They found eight benefits and five drawbacks of using the method. The benefits were categorized as: multimedia elements, motivational benefits, positive learning experience, tablets as practical learning tools, DST as a new learning method, promoting independent learning, replacing traditional learning tools, and language learning impact. The researchers also identified several drawbacks of using the tablet-based DST approach as follows: getting bored because of the excessive use of the application, addiction to mobile and application use, which resulted in health problems, limitations on the number of words and stories to be included, and finally the short lifespan of the devices used. Having discussed both sides of the story, the researchers` conclusion was in favor of using DST in vocabulary learning, and they recommended it as a suitable technique to be used in language classes.

Vocabulary Learning Frameworks

Vocabulary development, as the other main variable in the present study, has been extensively studied in EFL research. Having studied the phenomenon of vocabulary instruction extensively, Paul Nation and his colleagues (Nation, 2008; Nation & Chung,2009) have urged instructors and researchers to ask three main questions about each vocabulary lesson. What vocabulary should be included? How should vocabulary knowledge be taught? And how should this acquired knowledge be assessed? These questions follow four strands, namely: meaning-focused input, meaning-focused output, language-focused learning, and fluency development, as suggested by the aforementioned scholars. Although a large number of studies have been conducted on vocabulary acquisition, effective vocabulary teaching research seems to have neglected these paradigms when compared to other language aspects (Amelia et al. 2019). The effect of DST tasks on vocabulary knowledge acquisition, thus, has not been studied systematically and comprehensively (Amelia et al. 2019).

Moreover, as reviewed above, none of the studies conducted in an Iranian context have focused solely on vocabulary achievement and categorized it as receptive and productive. The studies conducted in other contexts have not divided vocabulary knowledge into receptive and productive subsections, either.

So, in spite of the prevalence of studies investigating DST in relation to different language skills including learners` writing skills (Sarica & Usluel, 2016), oral skills (Hwang, Shadiev, Hsu, Huang, Hsu, & Lin, 2016), motivation (Tecnam, 2013), and critical thinking (Yang & Wu, 2012) as well as vocabulary development (Tatli, Saylan, & Kokoç, 2022), there still remain some gaps in the literature in this regard (Ghafar, 2024). One of the gaps that we intended to fill in this study is the fact that the majority of studies conducted on the effect of digital storytelling on language acquisition have focused mostly on young learners. As urged by Ghafar (2024), more research on the effect of storytelling on adult foreign language learners is crucial.

Hence, in spite of the barriers to implementation of the task and the difficulties that learners may face while making digital stories, especially in developing countries, digital stories are suggested to be worth investigating. By designing and implementing the DST tasks in the syllabus as well as teaching the target words in context, we aimed to address all four of the aforementioned vocabulary learning strands. The learners received comprehensible input through reading the texts in the book, and they also mastered the target words deliberately by studying them. The learners also produced output by writing their stories and speaking in their digital stories, while also developing fluency by telling their stories.

Accordingly, the current study was guided by the following research questions:

RQ1: Do DST tasks significantly affect EFL learners` receptive and productive vocabulary knowledge?

RQ2: Is there a significant difference between the immediate and delayed effects of DST tasks on EFL learners` retention and recall of vocabulary knowledge?

RQ3: Do EFL learners have positive or negative perceptions about the use of DST tasks in EFL vocabulary instruction?

Method

Participants

The participants were 125 (57 females, 68 males) undergraduate ESP students, aged between 18 and 21. Before entering university in Iran, students typically attend English courses for four hours per week in high school, and some occasionally attend private language institutes. To homogenize the participants concerning their vocabulary knowledge—the variable under investigation—several measures were taken. Two intact classes were chosen. In a pilot study, a pool of 200 participants (from which the final 125 were selected) took a vocabulary knowledge test. An independent samples t-test (see Table 1) revealed no significant initial difference between the two groups, with observed p-values of 0.26 (total vocabulary knowledge), 0.14 (receptive vocabulary), and 0.15 (productive vocabulary). The data were also checked for normal distribution.

Following homogenization, 72 participants were assigned to the control group and 53 to the experimental group. The smaller size of the experimental group was due to unavoidable exclusions resulting from insufficient or unreliable data provided by some individuals.

Data Collection Procedure

This mixed-methods study adopted the free-space digital storytelling approach in three phases (Liu, Tai, & Liu, 2018), with slight modifications.

The first phase involved instruction based on the classroom syllabus, which followed the course book *Inside Reading 1* (Burgmeier, 2012). The book focuses on mastering target words listed at the beginning of each lesson through reading texts and completing exercises. Thus, while teaching each unit, the instructor was also teaching the target vocabulary. This phase was identical for both groups.

The second phase involved the creation of digital stories. Participants in the experimental group created four digital stories throughout the study. After an orientation session and being provided with the necessary applications, students were given weekly topics (e.g., writing about a vehicle, healthy foods, advertising products, and how to name a product). They were tasked with creating a three-minute digital story for each topic within one week. The process involved first writing a text, then transforming it into a 2- or 3-minute digital story by inserting photos or videos using a specific application, and finally recording and adding a voiceover to the file (see the Appendix for assigned subjects and screenshots of the videos).

The final phase involved sharing the created stories. The teacher collected all stories, and they were also shared in a WhatsApp group that all participants were members of, allowing them to view their classmates' work and share their own.

The control group participated only in the first teaching phase, covering the course book and learning words in context. They were given the same writing topics as the experimental group but were asked only to write a short paragraph to be handed in the following session. The allocated learning time and semester duration were identical for both groups; the sole difference was the use of DST tasks by the experimental group.

Data Collection Instruments

The primary data collection instrument was a vocabulary test developed by the researchers, based on the question types used in Nation's (1990) standard Vocabulary Levels Test (receptive knowledge) and Laufer and Nation's (1995) Lexical Frequency Profile (productive knowledge). The format of the standard tests was maintained, but the target vocabulary was replaced with items from the course. The test's internal consistency was established ($r = .82$) by administering it to a similar group of university students. Its content validity was confirmed by the researcher and two other EFL scholars. This validated test was used as the pre-test, immediate post-test, and delayed post-test (administered with a one-month interval).

To collect qualitative data on the learners' perceptions, a semi-structured interview was conducted. A set of interview questions was designed by the researchers to investigate participants' attitudes toward the DST tasks, their willingness to repeat the experience, and their overall opinion on using DST in EFL instruction. The questions were validated by two experts in EFL instruction. The interviews were recorded, transcribed, and underwent content analysis. To ensure inter-coder reliability, 10% of the data and the coding guidelines were shared with a colleague; the high level of agreement confirmed the reliability of the analysis.

An instructional sample digital story was shown to participants during the orientation session to familiarize them with the format. Three sample videos on subjects like sports, health, and art were selected from the Center for Digital Storytelling website and shown to participants. These videos were also shared in the WhatsApp group for future reference.

Finally, participants were provided with guidance on applications for creating digital stories (e.g., Movie Maker). They were free to choose applications compatible with their devices (Android, iOS, or Windows).

Results

Quantitative Analysis

The quantitative data were analyzed using SPSS version 27 as the main and recommended means used in SLA research (Dörnyei, 2007). Having two independent groups to be compared, we ran t-tests as the primary data analysis means.

In addition to normal distribution checks, preliminary measures were also taken for homogeneity across the participants pre to the main treatment (i.e., pretest phase). As presented in Table 1, significance levels of 0.26 (total vocabulary knowledge), 0.14 (receptive vocabulary), and 0.16 (productive vocabulary) of the independent samples t-test indicated no significant difference between the two groups initially. Participants' performances across the three stages were tabulated as summarized.

Table 1
Independent Samples t-Test Comparisons of Pre-Test Vocabulary Scores

Test/Variance	*F*	*p*	*t*	*df*	*p* (2-tailed)	*M* diff.	*SE* diff.	95% CI
Total score								
Equal variances	0.03	.85	1.11	123	.26	1.10	0.99	[-0.85, 3.05]
Unequal variances	—	—	1.12	115	.26	1.10	0.98	[-0.84, 3.04]
Receptive								
Equal variances	0.01	.89	1.46	123	.14	0.93	0.63	[-0.32, 2.18]
Unequal variances	—	—	1.46	111	.14	0.93	0.63	[-0.32, 2.18]
Productive								
Equal variances	1.79	.18	1.39	123	.16	0.78	0.56	[-0.33, 1.89]
Unequal variances	—	—	1.37	103	.17	0.78	0.57	[-0.34, 1.90]

Note. M diff. = Mean difference; *SE* diff. = Standard error difference; CI = Confidence interval. Total score range = 0–30; Receptive/Productive subscales = 0–15.

Table 2 presents the experimental and control group participants` mean scores on the three tests they took, i.e., the pre-, post-, and delayed post-test. Every individual had three scores on each of the tests: a score for the first section of the test, which was designed to measure their receptive

vocabulary knowledge (out of 15), a score for the second section of the test accounting for the productive vocabulary knowledge (out of 15), and a total score which was the participants` overall score in the two parts (out of 30).

Table 2
Descriptive Statistics for Vocabulary Scores Across Test Phases by Group

Phase	Variable	Experimental		Control	
		M	*Mdn*	*M*	*Mdn*
Pre-test	Total	12.22	12.00	11.12	10.00
	Receptive	8.01	9.00	7.08	6.00
	Productive	4.71	4.00	3.93	3.00
Post-test	Total	24.90	27.00	17.98	18.00
	Receptive	12.90	14.00	10.94	11.00
	Productive	12.00	13.00	7.04	7.00
Delayed post-test	Total	24.96	27.00	—	—
	Receptive	13.26	14.00	—	—
	Productive	11.73	13.00	—	—

Note. *M* = Mean; *Mdn* = Median; Total score range = 0–30; Receptive/Productive subscales = 0–15. Dashes (—) indicate no data collected for the control group in the delayed post-test.

Having looked at the data presented above regarding the experimental group, one can see the difference in the mean scores of the pre-test (Tot = 12.22) and the post-test (Tot = 24.90), but there is not much difference in the mean scores of the post-test (Tot = 24.90) and the delayed post-test (Tot = 24.96). So, the primary raw data itself is indicative of the effect of DST on vocabulary acquisition and its long-term retention.

To find out if the treatment (i.e., doing DST tasks) exerted any significant effect on the learners` final achievement, we ran a set of tests. An independent samples *t-test* was used to compare the two groups in relation to their post-test scores of receptive, productive, and total vocabulary knowledge (Table 3).

Table 3
Independent Samples t-Test Results for Post-Test Vocabulary Gains

Variable	Variance Assumption	*F*	*p*	*t*	*df*	*p* (2-tailed)	Mean Diff.	*SE* Diff.	95% CI
Total	Equal	2.09	.15	6.67	123	< .001	6.92	1.03	[4.89, 8.95]
	Unequal	—	—	6.86	121	< .001	6.92	1.00	[4.94, 8.90]
Receptive	Equal	4.76	.03	3.66	123	< .001	1.96	0.53	[0.91, 3.01]
	Unequal	—	—	3.81	122	< .001	1.96	0.51	[0.95, 2.97]
Productive	Equal	1.08	.30	7.99	123	< .001	4.95	0.62	[3.73, 6.17]
	Unequal	—	—	8.15	118	< .0			

The results revealed a significant difference between the control and the experimental groups concerning both their overall performances and their receptive and productive vocabulary knowledge at the level of $p < .01$. It means that the experimental group performed better than the control group in the two parts of the tests, that is, their total scores were better. So we can conclude that the treatment, i.e., DST tasks, had a significant effect on the participants` receptive and productive vocabulary knowledge development.

Additionally, we ran a paired samples *t-test* to explore if there were any significant differences between the immediate and delayed effects of DST tasks on EFL learners` vocabulary knowledge acquisition. We compared the post- and delayed post-test scores of the participants in the experimental group concerning their three scores: total knowledge score, as well as receptive and productive vocabulary scores. The control group was not subject to the delayed post-test, since in answering the second research question, we aimed at investigating the long-term effects of doing DST tasks, which were only done by the participants in the experimental group.

Table 4
Paired Samples t-Test Comparing Post-Test and Delayed Post-Test Scores (Experimental Group)

Comparison	*M* Difference	*SD*	*SE*	*t*	*df*	*p* (2-tailed)	95% CI
Total score	-0.05	3.30	0.45	0.12	52	.90	[-0.95, 0.85]
Receptive vocabulary	-0.35	1.84	0.25	1.41	52	.16	[-0.85, 0.15]
Productive vocabulary	0.26	2.35	0.32	0.81	52	.41	[-0.37, 0.89]

The results revealed no significant difference in any of the categories, i.e., total score (sig.=0.90), receptive vocabulary (sig.=0.16), and productive vocabulary (sig.= 0.41) score. In other words, the participants` acquired vocabulary knowledge was not forgotten during the time (retention), which can mean that the positive effect of the teaching method used in this study (DST) was durable.

Qualitative Analysis

Thematic analysis of the interview data revealed overwhelmingly positive perceptions of the digital storytelling (DST) tasks. The most frequently used descriptor was "innovative," followed by "interesting" and "helpful." Participants reported that the method facilitated vocabulary learning and offered additional educational benefits.

Positive Perceptions and Learning Benefits

Participants universally acknowledged the utility of DST for learning target vocabulary, though they differed in their assessment of its difficulty. Many highlighted the development of ancillary skills, both linguistic and technological.

> Ali*: "It was good and innovative, thanks."*
>
> Zahra*: "It was really interesting for me and made me go out of my way to do my best."*
>
> Aysan*: "It was really fun and helped me learn the new word innovatively."*
>
> Kimia*: "It was difficult, but I learned a lot."*
>
> Mohammad*: "I learned not only new words but also software and apps."*
>
> Ayhan*: "I think it is good for listening and speaking as well as vocabulary learning. I learned PowerPoint, too."*

Beyond vocabulary, participants reported improvements in other language skills, particularly writing (through scripting their narratives) and speaking/pronunciation (through recording voiceovers). One participant noted that the task provided inadvertent listening practice through repeated review of their own recordings.

Challenges and Obstacles

The primary challenge cited was technological. Participants without reliable access to a laptop, computer, or suitable mobile device, or those lacking digital literacy skills, found the process more time-consuming and difficult.

> Reza*: "The most difficult part for me was the pronunciation of the words, I`d rather write than speak."*

One participant noted that his first story took approximately five hours to complete. However, he also reported that the time investment decreased with practice and expressed satisfaction at having acquired a new digital skill.

Suggestions for improvement

Participants offered constructive suggestions for future implementations of DST. A common theme was a desire for more autonomy in choosing story topics rather than being assigned specific themes. Others suggested a more collaborative, in-class approach to mitigate technical challenges and leverage peer support.

> Anisa*: "It was very useful, but I preferred to make stories about my own topics rather than be limited to what you had assigned."*
>
> Vahid*: "I would rather make stories on open subjects and also present my story in class to my friends."*
>
> Shiva*: "Working as a team in class and making stories together will be better since we can help each other when one does not know what to do or how to use the app."*

Discussion

The current study investigated the effects of digital storytelling (DST) on EFL learners' receptive and productive vocabulary knowledge, as well as their perceptions of this technology-mediated task. The findings align with and extend previous research in several key ways while addressing gaps in the literature regarding adult learners and vocabulary subtypes in under-resourced educational contexts.

Interpretation of Quantitative Findings

The quantitative analysis addressed two primary research questions concerning the impact of digital storytelling (DST) tasks on receptive and productive vocabulary development, and the durability of these effects. Results demonstrated statistically significant improvements in both vocabulary knowledge domains, with sustained retention observed in delayed post-testing. These findings extend previous research (Abdul-Ameer, 2014; Tajeri et al., 2017) through two key contributions: first, by explicitly differentiating between receptive and productive vocabulary gains, an underexplored distinction in DST literature, and second, by focusing on university-level learners rather than the children typically examined in such studies (Ghafar, 2024).

The observed outcomes are in line with the study by Tajeri et al. (2017), who confirmed the effects of DST tasks on language skills, including vocabulary knowledge. Unlike Amelia et al. (2019), however, we did not come across any specific drawbacks of making digital stories, such as boredom, addiction, or health problems on the part of the learners. However, some students complained about being unfamiliar with how to use the necessary application or a lack of time in doing so. In their attempt to make digital stories, they also learned how to use a new device, hence improving

their 21st-century skills, besides those of language learning. The positive outcome also mirrors Gashti's (2021) findings on storytelling efficacy in Iranian EFL contexts, albeit through a distinct methodological approach.

The study's findings can be comprehensively explained through three interconnected theoretical frameworks that collectively account for the effectiveness of digital storytelling (DST) in vocabulary acquisition. First, constructivist learning theory (Ohler, 2013; Jonassen et al., 1999) elucidates how DST transforms learners from passive recipients to active meaning-makers through story creation, peer collaboration, and reflective editing processes. Second, Nation's (2008) four-strand model demonstrates how DST systematically addresses all critical dimensions of vocabulary learning: meaning-focused input through contextual exposure, meaning-focused output via script writing and narration, language-focused learning during vocabulary selection, and fluency development through repeated practice. Third, cognitive neuroscience principles (Oakley et al., 2017) reveal how DST's multisensory approach - combining verbal, visual, and auditory modalities - enhances memory encoding and retention by activating multiple neural pathways, fostering emotional connections, and reinforcing learning through the physical creation process. Together, these frameworks provide a robust theoretical foundation that explains both the immediate vocabulary gains and the remarkable retention effects observed in the study, highlighting DST's unique capacity to integrate active construction, comprehensive vocabulary processing, and multisensory engagement for optimal language learning outcomes.

Motivational factors likely contributed to these outcomes. Like Abdul-Ameer (2014) and Amelia et al. (2019), who have attributed the positive effects of making digital stories to motivational aspects besides others, the feedback received from the participants of the present study through interviews has been indicative of their heightened interest in doing the task and their motivation in fulfilling it.

Interpretation of Qualitative Findings

Concerning the last research question, the findings regarding the learners` perceptions of the implementation of DST tasks in language classes were primarily positive. In spite of some limitations, pinpointed by the participants in the interviews, such as a lack of resources or inability to work with applications, almost all of the participants found the task a useful and innovative one. In fact, they regarded the usefulness of the task to go beyond the boundaries of vocabulary and even language learning and encompass the 21st. century skills.

Similar to the students in Nami and Asadnia`s (2024) study who had positive perceptions of the use of DST tasks in EFL instruction and recommended using animated and game-based tasks to facilitate vocabulary acquisitions, the participants in the present study also talked positively about making digital stories in the process of language acquisition and found it interesting as well as useful.

This interest in the task and its positive acceptance on the part of the participants may, as admitted by the students, be due to the fact that they had never experienced such an activity as something to be assigned as homework and had been used to studying in traditional ways. In fact, as experienced by the researchers and mentioned by the students, in most educational settings, having technological devices, especially cellphones, and being busy using them in classes is forbidden, and the fact that on this rare occasion they were encouraged to use them made it interesting for the participants. They could also improve other language skills, such as writing and speaking, besides learning the new words.

Pedagogical Implications

Pedagogically, this study demonstrates that DST is a feasible and powerful strategy even in resource-constrained settings. Success hinges on three factors: (1) providing initial technical training and orientation for both teachers and students, (2) scaffolding tasks by starting with simple, accessible tools (e.g., smartphone apps), and (3) ensuring learners have basic access to technology. Equipping EFL educators with these skills can be effectively incorporated into teacher training courses (TTCs), while learners can be prepared through dedicated orientation sessions.

In conclusion, this study provides compelling evidence that integrating digital storytelling into EFL instruction significantly enhances both receptive and productive vocabulary knowledge and promotes long-term retention. Furthermore, it is perceived positively by learners, who value its innovation and the broader skills it fosters. By bridging theory and practice, this approach offers a sustainable model for enhancing language learning outcomes in diverse educational contexts.

Conclusion

This study provides robust evidence that digital storytelling (DST) is an effective tool for enhancing both receptive and productive vocabulary knowledge among university-level EFL learners in under-resourced contexts.

In this study, DST-integrated instruction significantly surpassed traditional methods in both immediate and long-term vocabulary retention (Tables 2–3). Learners found DST motivating and beneficial for integrated skill development (writing, speaking, pronunciation), and the approach remained feasible with minimal technology (e.g., smartphones) and basic training.

These results extend previous research in three key ways, namely: addressing the adult learner gap in DST literature (Ghafar, 2024), differentiating vocabulary types, showing particularly strong gains in productive knowledge, and validating DST's applicability in developing-country classrooms.

The study operationalizes three foundational theories, i.e., constructivism (Jonassen et al., 1999): Learners constructed knowledge through story creation, multimedia Learning Theory (Mayer, 2003): Dual coding (visual + auditory) enhanced memory, and Nation's (2008) four strands: DST naturally incorporated input, output, focus, and fluency.

Although an attempt was made to conduct a reliable study, it was limited in certain aspects like not being expanded to language skills other than vocabulary knowledge, not providing learners the opportunity to present their work in the classroom and benefit from the advantages of group work, interaction, and peer or instructor feedback, and not being conducted in a variety of EFL contexts such as private language institutes. Also, our focus was only on individual rather than collaborative DST task performance, possibly a better way of conducting DST-task-based instruction.

Future studies are suggested to replicate the study in contexts other than a university, for example, at schools or private language institutes. Moreover, further studies can continue the tradition with a larger number of DST tasks to be made by the students. Otherwise stated, the number of tasks can be increased, as well as providing the learners with the opportunity to present their work to their friends and get their feedback. In addition, the study can be conducted in other countries with cultural differences, alongside controlling the effects of motivation while doing DST tasks. Different age groups and proficiency levels can also be targeted using this study strand.

References

Abdul-Ameer, M. A. (2014). Improving vocabulary learning through digital stories with Iraqi young learners of English at the primary level. *Journal of Studies in Social Sciences*, *8*(2), 197-214.

Amelia, L. C. H., Zainol Abidin, M., & Saibon, J. S. (2019). The benefits and drawbacks of using tablet-based digital storytelling in vocabulary learning among Malaysian young English as a second language (ESL) learners. *Asia Pacific Journal of Educators and Education,34*, 17–47.

Beck, M. S., & Neil, J. A. (2021). Digital storytelling: A qualitative study exploring the benefits, challenges, and solutions. *CIN: Computers, Informatics, Nursing*, *39*(3), 123-128.

Burgmeier, A., Burgmeier, A., Zwier, L. J., Rubin, B., Richmond, K., & Zimmerman, C. B. (2012). *Inside Reading 1*. Oxford University Press.

Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press.

Gashti, Z. R. (2021). The impact of storytelling and cooperative learning on Iranian EFL learners' vocabulary achievement. *International Journal of Linguistics, Literature and Translation*, *4*(5), 63-76.

Ghafar, Z. (2024). Storytelling as an educational tool to improve language acquisition: a review of the literature. *Journal of Digital Learning and Distance Education*, *2*(10), 781-790.

Hampp, P. L., Kumayas, T. A., & Lengkoan, F. (2021). Synthesizing grammar and structure problems faced by Indonesian TOEFL participants. *Jurnal Pendidikan Bahasa Inggris Undiksha*, *9*(1), 64-68.

Hwang, W. Y., Shadiev, R., Hsu, J. L., Huang, Y. M., Hsu, G. L., & Lin, Y. C. (2016). Effects of storytelling to facilitate EFL speaking using a Web-based multimedia system. *Computer Assisted Language Learning, 29*, 215–241.

Jonassen, D., Peck, K., & Wilson, B. (1999). *Learning with technology: A constructivist perspective*. Prentice Hall.

Kearney, M. (2013). A learning design for student-generated digital storytelling. *The Future of Learning Design*, 73-92.

Kegenhof, A., Cutrim Schmid, E., & Whyte, S. (2014). Digital storytelling in the primary EFL classroom. *Teaching Languages with Technology: Communicative Approaches to Interactive Whiteboard Use*, *86*.

Kristiawan, D., Ferdiansyah, S., & Picard, M. (2022). Promoting vocabulary building, learning motivation, and cultural identity representation through digital storytelling for young Indonesian learners of English as a foreign language. *Iranian Journal of Language Teaching Research*, *10*(1), 19-36.

Lambert, J. (2013). *Digital storytelling: Capturing lives, creating community*. Routledge.

Laufer, B., & Nation, I. S. P. (1995). Lexical richness in L2 written production: Can it be measured? *Applied Linguistics*, 16, 307–322.

Liu, K. P., Tai, S. J. D., & Liu, C. C. (2018). Enhancing language learning through creation: The effect of digital storytelling on student learning motivation and performance in a school English course. *Educational Technology Research and Development*, *66*, 913-935.

Mayer, R. (2003). The promise of multimedia learning: Using the same instructional design methods across different media. *Learning and Instruction*, *13*(2), 125–140.

Nami, F., & Asadnia, F. (2024). Exploring the effect of EFL students' self-made digital stories on their vocabulary learning. *System*, *120*, 103-205.

Nation, P. (1990). *Teaching and learning vocabulary*. Heinle & Heinle Publishers.

Nation, P. (2008). *Learning vocabulary in another language.* Cambridge University Press.

Nation, P. & Chung, T. (2009). Teaching and testing vocabulary. In Long, M.H. & Doughty, C.J (eds.), *The handbook of language teaching.* Wiley- Blackwell publications.

k *Learning vocabulary in another language*. Cambridge University Press.

Oakley, G., Pegrum, M., Xiong, X. B., Lim, C. P., & Yan, H. (2017). An online Chinese-Australian language and cultural exchange through digital storytelling. *Language, Culture and Curriculum*, *31*(2), 128-149. doi:10.1080/07908318.2017.1386193

Ohler, J. (2013). *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity* (2nd ed.). Sage.

Raffone, A. (2020). Digital storytelling in education and second language acquisition: towards a theoretical framework. In Digital Storytelling in Second and Foreign Language Teaching (pp. 3-26). IGI Global.

Rahimi, M., & Yadollahi, S. (2017). Effects of offline vs. online digital storytelling on the development of EFL learners' literacy skills. *Cogent Education*, *4*(1), 1285531.

Rodríguez, C. L., García-Jiménez, M., Massó-Guijarro, B., & Cruz-González, C. (2021). Digital storytelling in education: A systematic review of the literature. *Rev. Eur. Stud.*, *13*, 13.

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st-century classroom. *Theory into Practice*, *47*, 220–228.

Sarica, H., & Usluel, Y. (2016). The effect of digital storytelling on visual memory and writing skills. *Computers & Education, 94*, 298–309.

Segler, T. M., Pain, H., & Sorace, A. (2011). Second language vocabulary acquisition and learning strategies in ICALL environments. *Computer Assisted Language Learning*, *15*(4), 409-422.

Sembiring, D. L. B., & Simajuntak, D. C. (2023). Digital storytelling as an alternative teaching technique to develop vocabulary knowledge of EFL learners. *Journal of Languages and Language Teaching, 11(2),* 211-224.

Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Springer.

Schmoelz, A. (2018). Enabling co-creativity through digital storytelling in education. *Thinking skills and creativity*, 28, 1-13.

Swain, M. (1995). Three functions of output in second language learning. *Principles and practice in applied linguistics: Studies in honor of HG Widdowson*, 125-144.

Tajeri, M., Syal, P., & Marzban, S. (2017). Enhancing vocabulary and writing skills through digital storytelling in higher education. *Journal of Educational Technology*, *14*(3), 40- 48.

Tatli, Z., Saylan, E., & Kokoç, M. (2022). Digital storytelling in an online EFL course: Influences on speaking, vocabulary, and cognitive load. *Participatory Educational Research*, *9*(6), 89-112.

Tecnam, Y. (2013). Are you digitized? Ways to provide motivation for ELLs using digital storytelling. *International Journal of Research Studies in Educational Technology, 2*, 25–34.

Waring, R., & Nation, P. (2004). Second language reading and incidental vocabulary learning. *Angles on the English-speaking World*, 4, 11-23.

Webb, S. (2020). Depth of vocabulary knowledge. In S. Webb (Ed.), *The Routledge handbook of vocabulary studies* (pp. 96–111). Routledge.

Yang, Y. C., & Wu, W. I. (2012). Digital storytelling for enhancing student academic achievement, critical thinking, and learning motivation: A year-long experimental study. *Computers & Education, 59*, 339–352.

Appendix

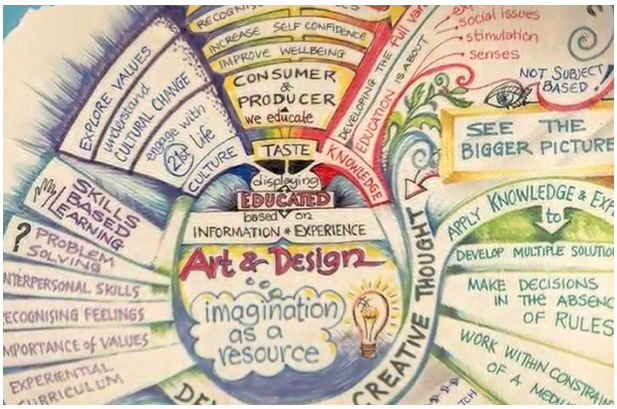
A number of assigned subjects with which the participants were supposed to make stories and a sample story made, in a format of a picture, are presented below:

1. Imagine that you work as a police officer in a small city. Your department has purchased a Segway for each officer who patrols the city streets. Yesterday was the first day patrolling on your Segway. Use your imagination and write a story about how you used the Segway, what you liked, and what problems you had.

2. What are some things that people can do to be healthy? What are some things that people can do to feel better if they get sick?

3. Think of the many ways that a product could be advertised, such as on TV or in a magazine. What are the advantages of each way?

4. Reading 2 mentions several rules for naming a product. Think of some successful products whose names do not follow these rules. Why do you think they are successful anyway?



Sima Modirkhameneh has a PhD in TEFL/TESOL from the University of Surrey, UK. Since her return to Iran in September 2006, she has been lecturing at undergraduate and postgraduate levels and researching in Urmia University, Iran. Her main research interests include: bilingualism, first and second language acquisition, cross-linguistic transfer, and multiple intelligences in relation to language learning. She has served as the Head of the Department of English Language and Literature and the Deputy Head of the Foreign Languages Center of Urmia University.

Mahsa Mohammadpour Yaghiny has recently recived her PhD in TEFL from Urmia University and is a lecturer at the University of Tabriz. She got her master's degree in TEFL and BA degree in English literature from the University of Tabriz. Since 2012 she has been teaching English as a foreign language at private language institutes for different age groups at different proficiency levels. Her research interests include: second language acquisition, pragmatics, language transfer and CALL.