

**DIGITAL STORYTELLING AS A VOCABULARY ACQUISITION
STRATEGY IN EFL SECONDARY CLASSROOMS: A MIXED-METHODS
INVESTIGATION**

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Abstract: Vocabulary acquisition constitutes a critical yet frequently underserved dimension of English as a Foreign Language (EFL) instruction, particularly in secondary education contexts characterised by limited target-language exposure and predominantly form-focused pedagogy. Digital storytelling (DST) the practice of using digital tools to create short, multimodal narratives has gained traction as an innovative pedagogical strategy that integrates technology with meaning-making processes. This mixed-methods study examines whether DST-based vocabulary instruction produces superior vocabulary acquisition outcomes compared to conventional vocabulary instruction (word-list memorisation and sentence-writing exercises) in a public secondary school EFL setting in Uzbekistan. Eighty grade-10 students (aged 15–16) were randomly assigned to experimental (DST, $n = 40$) and control (conventional, $n = 40$) conditions over an eight-week period. Vocabulary knowledge was assessed using a pre-test, immediate post-test, and delayed post-test (four weeks later) battery consisting of an adapted Vocabulary Levels Test (VLT) and a productive vocabulary use task. Quantitative results indicated that the DST group significantly outperformed the control group on both immediate ($d = 0.94$) and delayed ($d = 1.07$) post-tests, with substantially smaller retention loss over the four-week interval (6.1% vs. 17.5%). Semi-structured focus group discussions and student learning journals provided qualitative evidence that DST enhanced contextual word learning, personal relevance, and multimodal encoding factors theoretically associated with deeper lexical processing. These findings suggest that digital storytelling represents a pedagogically viable and motivationally effective approach to vocabulary instruction in EFL secondary contexts across Central Asia and beyond.

Keywords: digital storytelling, vocabulary acquisition, EFL secondary education, incidental learning, multimodal instruction.

Introduction

Vocabulary knowledge is widely recognised as one of the strongest predictors of overall language proficiency and academic achievement among EFL learners (Nation, 2001; Schmitt, 2010). Without a sufficiently large and well-organised mental lexicon, even structurally competent learners struggle to read, write, listen, or speak with the fluency and precision required in academic and professional settings. Yet vocabulary instruction has historically occupied an ambiguous position in language pedagogy: sidelined in communicative approaches that prioritise grammar and discourse, and reduced in form-focused approaches to decontextualised word-list memorisation (Hunt & Beglar, 2005).

In Uzbek secondary schools, vocabulary instruction predominantly follows the latter pattern. Students are presented with bilingual word lists, expected to memorise translations, and subsequently tested on recall. While this approach may yield measurable short-term gains on decontextualised vocabulary tests, it consistently produces limited retention, poor contextual transfer, and low learner engagement (Nation, 2001; Thornbury, 2002). The result is a student population with declarative knowledge of isolated words but limited ability to

deploy them appropriately in connected discourse a gap with significant implications for academic and professional outcomes.

Digital storytelling (DST) has emerged as a potentially transformative pedagogical alternative. Rooted in the traditions of narrative inquiry and digital literacy, DST involves learners in creating short (two-to-five minute) multimodal narratives using accessible digital tools such as PowerPoint, Canva, or dedicated platforms such as Storybird and Book Creator (Robin, 2016). Creating a digital story requires learners to select, interpret, and deploy vocabulary purposefully within a personally meaningful narrative context conditions theoretically associated with the deep lexical processing (Craik & Lockhart, 1972) and 'noticing' (Schmidt, 1990) that SLA research identifies as critical for durable vocabulary acquisition. Additionally, the multimodal encoding afforded by DST integrating textual, visual, and auditory channels theoretically creates richer memory traces than monomodal word-list learning (Mayer, 2009).

This study addresses three research questions: (1) Does DST-based vocabulary instruction produce significantly greater immediate vocabulary gains than conventional instruction among grade-10 EFL learners in Uzbekistan? (2) Are DST-based vocabulary gains better retained over a four-week delay compared to conventionally learned vocabulary? (3) What do learners perceive as the mechanisms through which DST supports vocabulary acquisition?

Literature Review

2.1 Vocabulary Acquisition in EFL Contexts

The scholarly consensus distinguishes two primary pathways to vocabulary acquisition: intentional (direct) learning, in which the learner explicitly focuses on form-meaning mapping, and incidental learning, in which vocabulary is acquired as a by-product of engagement with meaning-focused tasks (Nation, 2001; Schmitt, 2010). Both pathways are necessary for comprehensive vocabulary development, but they serve different functions: intentional learning most efficiently builds a foundational core lexicon, while incidental learning is the primary mechanism through which the large vocabulary needed for academic competence is extended over time (Hulstijn, 2001).

The Involvement Load Hypothesis (Laufer & Hulstijn, 2001) provides a particularly influential theoretical framework for predicting the depth of vocabulary processing associated with different task types. The hypothesis proposes that three components need, search, and evaluation jointly determine how deeply a word is processed during a learning task. Tasks imposing a high involvement load (requiring learners to search for a word's meaning and evaluate its contextual appropriateness) produce superior retention compared to low-load tasks such as reading definitions in a list. DST, by design, imposes high involvement load: learners must identify words needed to express their narrative intentions (need), retrieve or look them up (search), and judge whether they fit the specific narrative context (evaluation) making DST theoretically an ideal high-retention vocabulary learning task type.

2.2 Digital Storytelling: Theoretical and Empirical Foundations

The pedagogical use of storytelling for language learning predates the digital era, drawing on the tradition of narrative as a primary human meaning-making tool (Bruner, 1990). What digital technology adds is a multimodal dimension: learners encode target words through text, images, sound, and animation, theoretically enhancing memory consolidation by creating multiple retrieval pathways (Mayer, 2009). Mayer's Cognitive Theory of Multimedia Learning posits that verbal and pictorial information are processed through separate cognitive channels and that their integration produces richer, more durable memory representations

than monomodal processing alone a finding with direct implications for vocabulary retention.

Empirical research on DST and vocabulary acquisition has produced predominantly positive findings. Yang and Wu (2012) found significant vocabulary gains among Taiwanese elementary EFL students engaged in a DST programme compared to a reading-aloud control group. Tsou, Wang, and Tzeng (2006) demonstrated that DST activities produced deeper processing and better recall of target vocabulary in a Taiwanese secondary context. More recently, Cakir (2016) reported that digital storytelling significantly improved both vocabulary knowledge and writing skill among Turkish EFL learners, attributing gains to the narrative-driven need for contextual word selection. These cross-cultural findings converge on DST as a robust vocabulary-learning approach, though no study to date has investigated it in a Central Asian EFL context.

2.3 Technology Integration in Central Asian EFL Contexts

The integration of digital technologies into EFL instruction in Central Asian contexts presents both opportunities and challenges. Smartphone penetration in Uzbekistan exceeded 80% in 2023, and the majority of secondary school students have access to at least one device suitable for basic DST production (UNDP Uzbekistan, 2023). However, many secondary school teachers report limited digital literacy, insufficient internet infrastructure, and institutional resistance to non-conventional instructional approaches (Sysoyev & Evstigneev, 2015). These realities informed the present study's DST design, which was deliberately calibrated to require only basic, freely available tools specifically PowerPoint and Google Images ensuring replicability in resource-constrained settings.

Methodology

3.1 Research Design

A mixed-methods design was employed, combining a randomised controlled experiment with qualitative data from focus groups and learning journals. Random assignment of individual students within a single large class group subsequently split for experimental purposes was implemented, minimising selection bias. The quantitative strand followed a pre-test/immediate post-test/delayed post-test three-wave design; the qualitative strand used concurrent data collection to interpret and contextualise quantitative outcomes.

3.2 Participants

Eighty grade-10 students (aged 15–16; 51% female) from a public secondary school in Samarkand, Uzbekistan participated. All had received English instruction for a minimum of five years. Pre-test vocabulary scores confirmed group equivalence ($t = 0.31$, $p = .76$). Parental consent and student assent were obtained in accordance with institutional ethical guidelines. No financial incentives were offered.

3.3 Target Vocabulary and Instructional Treatments

Sixty target words drawn from Nation's (2001) Academic Word List (AWL) were selected as the focus of the eight-week treatment, distributed across four thematic clusters (environment, technology, health, and society), each addressed over two weeks. The experimental group engaged in DST creation: pairs of students used PowerPoint to create a four-to-six slide digital story incorporating all 15 target words from the active cluster. Stories were peer-reviewed and briefly presented (3–4 minutes) to the class. The control group received conventional vocabulary instruction: target words were introduced via bilingual word lists, students wrote ten sentences using target words per week, and vocabulary tests were administered fortnightly. Both groups received identical reading passages containing target words to control for incidental exposure.

3.4 Instruments

3.5 Data Analysis

Results

Group	Pre-test M (SD)	Immediate Post-test M (SD)	Delayed Post-test M (SD)	Retention Loss
DST Experimental (n=40) (6.1%)	21.4 (3.2)	47.8 (4.1)	44.9 (4.4)	-2.9 pts
Conventional Control (n=40) (17.5%)	21.6 (3.4)	38.2 (4.7)	31.5 (5.1)	-6.7 pts

As Table 2 shows, the DST group achieved substantially higher immediate post-test scores ($M = 47.8$ vs. $M = 38.2$; between-group $d = 0.94$) and demonstrated markedly smaller retention loss over the four-week delay (6.1% vs. 17.5%). By the delayed post-test, the between-group advantage had increased rather than diminished ($M = 44.9$ vs. $M = 31.5$; $d = 1.07$), indicating that DST-acquired vocabulary was not only learned more deeply but retained more durably across time.

On the productive vocabulary use task, the DST group again significantly outperformed the control group at immediate post-test ($M = 28.4/40$ vs. $M = 21.7/40$; $d = 0.88$) and at delayed post-test ($M = 26.8/40$ vs. $M = 17.4/40$; $d = 1.16$). Qualitative analysis of the productive responses revealed that DST participants used target words in more contextually varied and semantically precise ways, incorporating collocations and idiomatic expressions that were conspicuously absent from control group written responses.

Thematic analysis of focus group discussions and learning journal entries yielded three primary themes. The first theme, contextual embedding, captured learners' accounts of how placing target words within a personally meaningful narrative made meanings more memorable. A participant wrote: I put the word consequence in my story about deforestation

and now I always see it with the image of the dying forest. The second theme, agency and creative ownership, highlighted the motivational impact of learner autonomy. Participants described choosing personally meaningful topics: I needed sustainable and renewable for my story about solar energy, and I looked them up myself. The third theme, peer learning during class presentations, captured incidental vocabulary acquisition from peers' stories, suggesting a social amplification effect absent from conventional instruction.

Discussion

The findings provide strong empirical support for DST as a vocabulary acquisition strategy in EFL secondary contexts. The superior immediate gains of the DST group are consistent with the predictions of the Involvement Load Hypothesis (Laufer & Hulstijn, 2001): the DST task design imposed higher involvement load than the sentence-writing control task, producing deeper lexical processing and stronger initial memory consolidation. The larger effect size at the delayed post-test compared to the immediate post-test is particularly noteworthy and theoretically significant. It suggests that the multimodal, narrative-contextual encoding associated with DST – specifically, the visual-narrative context in which words were originally embedded – continues to function as an effective retrieval cue week after initial learning, consistent with Mayer's (2009) dual-channel processing theory and with Craik and Lockhart's (1972) levels of processing framework.

The qualitative data are theoretically important in linking quantitative outcomes to specific cognitive and motivational mechanisms. The theme of contextual embedding maps directly onto the levels of processing framework: learners processed target words semantically – in relation to the meanings they wanted to construct in their narratives – rather than phonologically or orthographically, producing the deeper memory traces associated with superior retention. The theme of agency and creative ownership aligns with self-determination theory (Deci & Ryan, 2000), which predicts that learning activities characterized by perceived autonomy and competence produce superior intrinsically motivated engagement and, subsequently, superior learning outcomes. The finding that class presentations generated incidental vocabulary acquisition for peer observers adds an important social dimension and extends the theoretical scope of the findings beyond individual cognitive processing to the socially distributed nature of vocabulary learning.

Several limitations warrant acknowledgment. First, the study targeted AWL vocabulary specifically; generalizability to other vocabulary sets – high-frequency general service words or domain-specific technical vocabulary – remains to be established. Second, the productive vocabulary task was researcher-designed and has not been independently validated, limiting direct comparability with other studies. Third, the same teacher delivered both treatment conditions, reducing between-group teacher-effect confounds but potentially introducing within-person differential enthusiasm across conditions. Future studies should incorporate blind teacher delivery or multiple-teacher designs, extend vocabulary target sets beyond the AWL, and investigate DST effectiveness across a broader range of proficiency levels and grade groups.

Conclusion

This study makes a substantive contribution to the literature on technology-mediated vocabulary learning in EFL contexts by demonstrating that digital storytelling produces both quantitatively superior and qualitatively richer vocabulary acquisition outcomes compared to conventional instruction in a Uzbek secondary school setting. The finding that DST advantages increase over a four-week delay – rather than diminishing, as is typical of vocabulary interventions – has significant practical implications: the initial time investment in DST creation is repaid through substantially better long-term retention. Given the minimal

technological requirements of the DST approach as operationalized here basic presentation software and internet image search these findings are directly relevant to resource-constrained EFL contexts throughout Central Asia.

We recommend that secondary English teachers incorporate structured DST projects as a regular component of vocabulary instruction, ideally one project per thematic unit, with an explicit scaffolded phase that guides learners through the vocabulary search and evaluation process. Curriculum designers should consider allocating dedicated instructional time for DST creation within the national secondary English curriculum framework. Future research should investigate the combined effect of DST and explicit vocabulary instruction, examine teacher professional development needs for DST integration, and explore longer-term impacts on reading comprehension and writing quality.

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