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The Efficacy of Digital Storytelling in Maintaining Heritage Language Nuance Among Third Generation Immigrant Learners

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Abstract

Heritage language maintenance becomes a major educational issue among third-generation immigrants since insufficient intergenerational communication may not only negatively affect vocabulary and grammar but also idiom usage, pronunciation, cultural meaning, storytelling patterns, and emotional expressiveness. This paper explores the efficiency of using digital storytelling to maintain heritage language nuance among Uzbek heritage language learners. The research involved a comparative experiment. Eighty learners participated in the research and were divided into two groups: an experimental group where learners used the digital storytelling technique and a control group with conventional heritage language learning techniques. The duration of the experiment was eight weeks. The digital storytelling approach comprised choosing a story theme, creating a script, voice recording, incorporating images and video, peer exchange, instructor evaluation, and iterative feedback and revision. The findings suggest that the experimental group demonstrated greater improvements in all learning aspects under consideration. Heritage language nuance retention was raised from 52.4 to 81.6 in the experimental group, as compared to 51.8 to 63.7 in the control group. Idiomatic expression was enhanced from 46.7 to 78.5; cultural meaning awareness was raised from 49.3 to 83.7; learner engagement was raised from 54.1 to 86.2; and speaking confidence was raised from 48.9 to 79.8. The statistical analysis showed considerable improvements with p-values being lower than 0.001 for each important indicator. The most significant progress was achieved in cultural meaning awareness, idiomatic expressions usage, engagement level, and oral communication skills. Hence, one may assume that digital storytelling contributes to heritage language teaching by using multiple forms of expression, constant oral training, emotional involvement, and culturally rich discourse. Consequently, digital storytelling is an efficient ICT-based method of heritage language preservation among third-generation immigrants.

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Background and Research Context

Heritage language preservation has emerged as a matter of paramount importance among immigrants, mainly among third-generation learners who typically grow up in the context of a dominant language. Many immigrants use their native language frequently in the first generation, both languages in the second generation, and the dominant language predominantly in the third generation due to their upbringing and education in the dominant language setting. Therefore, knowledge of heritage language declines gradually in subsequent generations. Loss of knowledge occurs not only in vocabulary and grammar but also in pronunciation, idioms, emotive meaning, cultural references, oral traditions, and natural language.

Language nuance is an integral part of heritage language learning because it conveys cultural memory, family values, humor, respect, emotive meaning, and traditions of speaking. Third-generation learners may have sufficient vocabulary but fail to convey culturally-specific meanings and phrases, including sayings, idioms, proverbs, and other expressions, depending on context. Traditionally, oral storytelling is an effective means for transferring culture from elders to younger generations, but this tradition is becoming weaker in the new conditions. Hence, there is a need for innovative ways of teaching heritage language in connection with contemporary communication practices.

The concept of digital storytelling is an effective way to employ ICT in the maintenance of heritage languages. Digital storytelling entails using text, voice, imagery, video, musical notes, and personal narration to enhance the learning experience. Using digital storytelling, learners can document family stories, cultural events, traditions, and personal experiences in their heritage language. The process helps with repeated language use, improved pronunciation, cultural reflection, and emotional attachment. In addition, teachers and families can provide formative feedback focusing on linguistic precision, idiomatic appropriateness, and cultural context. Therefore, digital storytelling may act as a contemporary pedagogy for preserving heritage language nuances for third-generation immigrant students.

Research Objectives

1. To explore the efficacy of digital storytelling in the preservation of heritage language nuances for third-generation immigrant learners.
2. To discuss the impact of digital storytelling on the acquisition of pronunciation, idioms, cultural meaning, emotional tone, and oral narratives.
3. To compare the performance of learners under the digital storytelling method with that of learners undergoing traditional heritage language teaching.

There is a clear structure to the study as well. Section I gives information on the background of heritage language attrition in third-generation immigrant language learners and explains the use of digital storytelling in the retention of linguistic nuances. Section II gives a review of the literature on heritage language acquisition, digital storytelling, multimodal teaching techniques, cultural identity, and language attrition, and describes the research gap. Section III introduces the experimental methodology used for this study, which includes a comparative analysis based on 80 Uzbek heritage learners separated into the experiment group and the control group. Section IV discusses the results in terms of pre-test and post-test comparisons, t-tests, and improvement scores in comparing the use of digital storytelling with conventional methods.

Literature Survey

Heritage languages are gaining increasing attention due to the natural process of gradual weakening of languages among immigrant generations. While third-generation learners are likely to know the basics of their native language, the richness of language skills is usually lost due to the disappearance of more complex elements, such as idioms, verbal expressions, tonality, meanings, and narrative styles. As explained by Polinsky and Scontras, the development of language skills among heritage language learners is different from native learners due to limited input, dominance of another language, and inconsistent language use (Polinsky & Scontras, 2020). Studies on language attrition also reveal how limited exposure to a language leads to the deterioration of pronunciation, grammar skills, lexical resources, and the ability to express ideas and emotions in a cultural way (Schmitt & Sorokina, 2024; Abu-Shnein et al., 2026). Additionally, studies on family language policies indicate the importance of parental and grandparental

involvement in using the heritage language across generations (Yu, 2026; Gu et al., 2025). Yet, in many immigrant households, third-generation learners lack communication skills with older relatives.

Some of these studies have identified heritage language learning in relation to identity, sense of belonging, and cultural continuity. According to Darvin & Norton (Darvin & Norton, 2014), digital storytelling can help migrant learners by providing opportunities for expressing transnational identity through personal and cultural stories. Similarly, George, (2024) also recognized that digital storytelling can help amplify the identities and voices of heritage language learners by providing opportunities to represent their families' history and multilingual experiences (Hudak, 2019). In addition, Garcia et al., (2023) pointed out the need to evaluate the speaker identity of heritage language speakers because language learning involves emotional and sociocultural aspects in addition to the linguistic elements. Additionally, Zhou & Liu, (2025) associated heritage language learning with learner well-being by proving that learners who are emotionally attached to their language feel more confident about learning and participating.

Digital storytelling has become one of the effective approaches to technology-enhanced language education due to its combination of text, audio, imagery, video, voiceover, and personal reflection. Shahid & Khan, (2022) found that digital storytelling could enhance engagement, creativity, communication, and participation by being utilized both in-class and out-of-class. Tkacheva, (2025) proved the significance of digital storytelling in enhancing sociocultural competence of university students studying Spanish in Uzbekistan. Prada, (2022) and Smith et al., (2021) stated that multimodal composition could help learners acquire language with the use of visual, oral, written, and cultural resources. Likewise, Pacheco et al., (2024) indicated that multimodal composition and translanguaging could facilitate agency, meaning-making, and multilingual identity construction. Thus, research proves the effectiveness of multimodal digital practices in language education.

Moreover, recent studies have emphasized the importance of digital media, family interaction, and cultural citizenship in heritage language learning. Romanowski, (2026) analyzed the effect of digital media on reinforcing the grandparent-grandchild interactions for heritage language revitalization. According to Pi et al., (2026), co-creation of multimodal artifacts can assist in negotiating the digital cultural citizenship of the learner. In addition, according to Pacheco et al., (2015), the use of heritage languages of the students can actually be regarded as a resource in the literacy classroom and not as an obstacle. Moreover, Sumartana et al., (2025) have also emphasized that the mother tongue should be preserved through education that values linguistic and cultural diversity. Furthermore, Kim & Park, (2020) revealed that culturally meaningful literacy practices can aid in self-expression of the learners using their heritage languages.

While there are previous studies that have looked into heritage language learning, digital storytelling, identity, multimodal composition, and language attrition, few of these studies have actually studied how digital storytelling helps to preserve heritage language nuances in third-generation immigrants. In most of the studies done previously, the emphasis was on vocabulary learning, communication, identity, and participation. Slightly less work has focused on the nuances of the language, including idiom usage, emotional tone, rhythms in oral storytelling, culture-specific phrases, humor, respect, and meaning in context. Hence, this study aims to fill in the gap by studying the effectiveness of digital storytelling in preserving the nuances of the heritage language in third-generation immigrants.

Research Methodology

A comparative experimental design was used in this study in order to investigate the effectiveness of digital storytelling in sustaining the nuance of the heritage language among Uzbek immigrant third generation learners. For this experiment, there were a total of 80 learners within the age range of 13 to 18 years. All learners came from Uzbek backgrounds but were taught using the dominant language of the host country. Learners were recruited from community-based heritage language learning centers and weekend language classes. On the basis of the results obtained from pre-tests and information regarding the background of learners, learners were classified into two equally proportioned groups.

The treatment spanned eight weeks with two weekly learning sessions. The sessions involved approximately 60-minute periods. During these lessons, the experimental group applied digital technologies such as voice recorders on phones, Canva, PowerPoint, Google Slides, simple video editing software and learning systems for digital storytelling. The chosen topics of stories included family life memories, Uzbek festivities, traditional foods, childhood stories, migrations, culture, folklore tales, and intergenerational dialogues. Such topics have been selected since they naturally contain cultural elements, idioms, emotive words and oral narrations based on heritage.

Both control and experimental groups took pre-test in order to determine vocabulary, pronunciation, idiom, narrative skills, cultural meaning perception, and the ability to use Uzbek language in a conversation. After the treatment period,

post-tests were taken according to the same criteria. Additional materials including students created stories, recordings of their oral performances, teacher observations and feedback and revision sheets were also analyzed.

For the data analysis process, comparison of pre-test and post-test results was conducted for both the experimental and control groups within themselves and against each other. The use of paired sample t-test helped detect any improvements in the two groups while that of independent sample t-test helped compare post-test results of the two groups. Correlation analysis helped establish a connection between learner engagement and the heritage language nuances retention. The effect size analysis helped find out the effectiveness of the digital storytelling approach. The qualitative data collected through teacher observations, learner reflections, and the digital stories were analyzed to support the quantitative data analysis results.

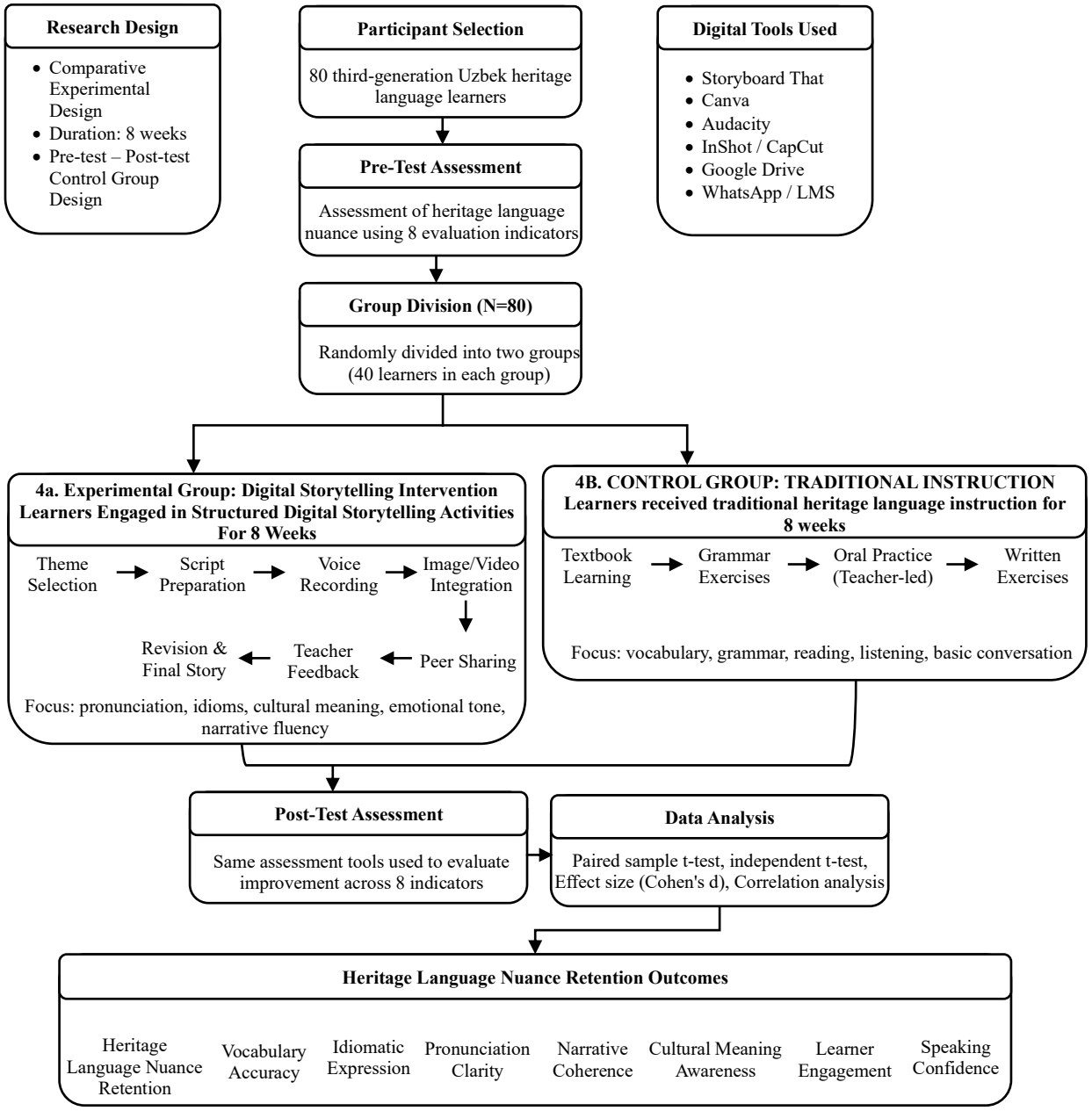


Fig. 1: Methodological Framework for Digital Storytelling-Based Heritage Language Nuance Retention

Fig. 1 demonstrates the research process as a step-by-step approach. These steps could start with participant selection, pre-test, participant grouping, digital storytelling activity on the part of the experimental group, traditional heritage language instruction of the control group, post-test, and data analysis. The final product would present the findings

about nuance retention, idiomatic expression, pronunciation, awareness of cultural meaning, participation, and speaking confidence. Fig. 1 will provide an overview of the methodology of the comparative experimental design used in the study.

Results and Discussion

As the findings indicated, the experimental group, which had been taught using the digital storytelling approach, made greater improvements compared to the control group, which had undergone traditional heritage language teaching methods. While both groups had some improvement from pre-test to post-test, the improvement was greater for those participants who engaged in digital storytelling activities. Better outcomes were observed in terms of heritage language nuance retention, vocabulary, idioms, pronunciation, story-telling skills, awareness of cultural meanings, participation, and confidence. Thus, it became clear that digital storytelling created a much more effective learning experience than conventional approaches.

Table 1: Comparative Pre-Test and Post-Test Performance of Experimental and Control Groups

Evaluation Indicator	Experimental Pre-Test Mean	Experimental Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
Heritage language nuance retention	52.4	81.6	51.8	63.7
Vocabulary accuracy	58.2	84.3	57.9	69.4
Idiomatic expression	46.7	78.5	47.1	58.2
Pronunciation clarity	55.6	82.1	56.0	67.3
Narrative coherence	50.8	80.4	51.2	62.8
Cultural meaning awareness	49.3	83.7	49.8	61.5
Learner engagement	54.1	86.2	53.7	65.9
Speaking confidence	48.9	79.8	49.4	60.7

Table 1 illustrates the pre-test and post-test results for learners in the experimental and control groups regarding their achievements on various criteria. From the data presented in table 1, one can conclude that the digital storytelling strategy proved more efficient in terms of the improvement of the participants' skills and knowledge. It allowed the members of the experimental group to make progress in heritage language nuance preservation, idioms use, understanding cultural meanings, engagement, and confidence.

The use of the digital storytelling method proved particularly useful when it came to idioms and nuanced use of the heritage language. Experimental group participants managed to apply culturally meaningful phrases, idioms, polite language expressions, emotionally loaded words, and family traditions typical of the oral storytelling process in their final stories. Thus, digital storytelling provided a chance to practice language by engaging in a personalized process of choosing a theme, writing a script, making a voice record, adding pictures and meanings of culture, sharing stories, and receiving feedback. In turn, the control group made progress in remembering vocabulary and constructing sentences; yet, they failed to develop emotionally and culturally.

Table 2: Statistical Comparison of Learning Outcomes

Indicator	Mean Difference Experimental Group	Mean Difference Control Group	t-value	p-value
Heritage language nuance retention	29.2	11.9	9.84	<0.001
Vocabulary accuracy	26.1	11.5	8.76	<0.001
Idiomatic expression	31.8	11.1	10.42	<0.001
Pronunciation clarity	26.5	11.3	8.95	<0.001
Narrative coherence	29.6	11.6	9.37	<0.001
Cultural meaning awareness	34.4	11.7	11.05	<0.001
Learner engagement	32.1	12.2	10.18	<0.001
Speaking confidence	30.9	11.3	9.91	<0.001

The statistical analysis of the differences between the experimental group and the control group is presented in table 2 below. As seen from the table, there were larger mean differences for all measures together with lower p-values, which proves that digital storytelling was more effective compared to traditional learning. The largest improvement was recorded for awareness of the cultural meaning, involvement of the learners, idioms, and speaking skills.

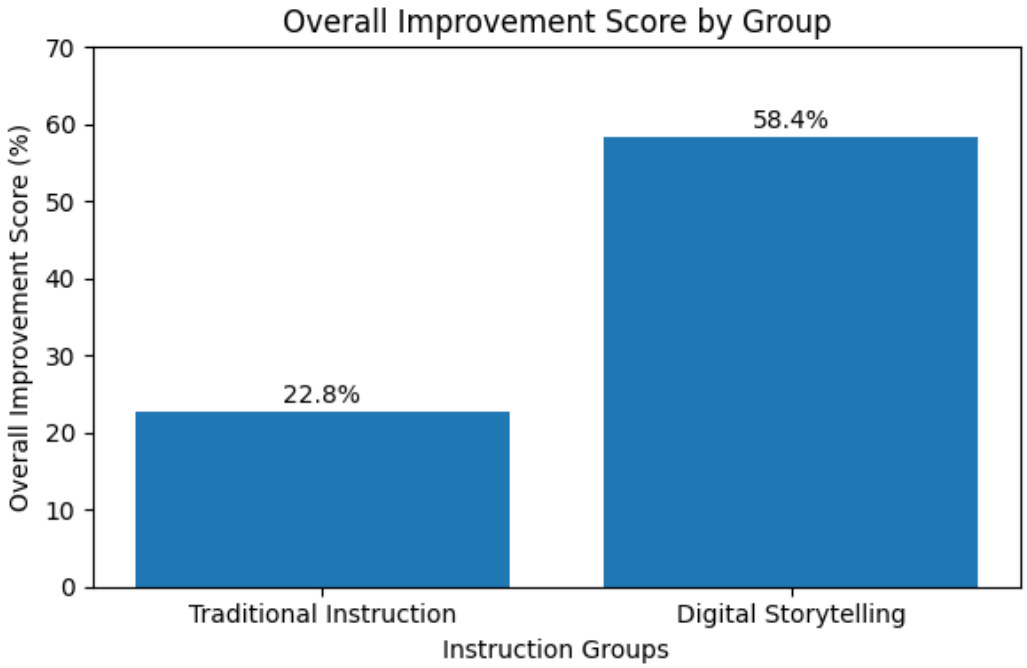


Fig. 2: Improvement in Heritage Language Learning Outcomes

Fig. 2 can be represented using a very basic bar graph depicting the overall score of the improvements made by each of the groups. The participants in the digital storytelling group made tremendous progress compared to those who took part in the traditional group. These results show the efficiency of the digital storytelling process since it incorporates visual elements, oral communication, culture, peer interaction, and teachers' feedback.

The study results also showed enhanced engagement and emotional connection with the heritage language among the learners due to the activities. The participants had increased motivation since their experience with digital storytelling gave them a chance to make connections between language learning and their family experiences, migration journeys, holidays, food, and other aspects of their culture. This finding is in line with educational technology theories as the activities used in the study are able to enhance learner participation by incorporating visual, oral, written, and emotional components.

In terms of second language and heritage language acquisition, the results indicate that constant exposure, meaningful interaction, contextual practice, and identity-driven learning are possible methods for achieving greater language retention. It is important to note that heritage language learners do not only require grammar and vocabulary practices since their language skills are linked to issues such as family identity, culture, and intergenerational memory. The utilization of digital storytelling allowed heritage language learners to practice their Uzbek language through narration, thus meeting this requirement. Hence, the results demonstrate the effectiveness of digital storytelling as an ICT-based teaching strategy for the preservation of the heritage language.

Conclusion and Future Scope

In summary, digital storytelling emerges as a useful ICT-assisted pedagogy for preserving heritage language nuances within third-generation immigrant learners. From the analysis, participants in the experimental group demonstrated significant gains compared to those in the control group, who were taught using conventional means. The experimental group experienced positive development in regard to heritage language nuances, idiomatic use, pronunciation clarity, narration, awareness of cultural meanings, engagement level, and confidence in speaking. The improvements in the awareness of cultural meanings (from 49.3 to 83.7), idiomatic use (from 46.7 to 78.5), engagement level (from 54.1 to 86.2), and confidence in speaking (from 48.9 to 79.8) indicate that digital storytelling encourages heritage language learning. Moreover, statistical results show p-values less than 0.001, further emphasizing the significance of this pedagogic method. Digital storytelling connects language use to familial recollection, migration experience, festivals, food preparation, oral narratives, and cultural identity. It combines script writing, voice recording, visual media, peer

evaluation, instructor feedback, and revision. Thus, digital storytelling encourages language practices and culturally appropriate expression, and its success requires pedagogical planning and continuous guidance by instructors. Future research can expand upon this study by conducting larger studies of learner populations in addition to studying those who are members of the Uzbek diaspora community living in different countries. Studies on the long-term impact are necessary for determining whether digital storytelling contributes to the maintenance of the heritage language. Another future possibility would be to compare various digital media, mobile apps, and assisted storytelling technologies in terms of their efficacy. Future studies could also integrate families into heritage language education through grandparent-child storytelling.

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