

Pre-Service Teachers' Opinion about Using Digital Storytelling as a Tool to Learn Speaking Skills

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Abstract. Many studies have discussed effective instructions for teaching speaking skills, but very few studies that explored students' preferences regarding the appropriate instruction for improving their speaking skills. This paper tries to fill the research gap by finding out the student's opinions on the use of digital storytelling for their speaking skills instruction. This study recruited 28 pre-service teachers to be participants. A qualitative approach was employed to answer the problems in this study. The findings were derived from analyzing the pre-service teacher's opinions through observations and interviews. The findings revealed that most pre-service teachers feel satisfied with using digital storytelling to learn speaking skills. Moreover, those pre-service teachers presume that speaking was no longer boring activity, it became both fun and challenging and develop their digital literacy. The study suggests that the activities during creating a digital storytelling project should be well prepared.

Keywords: project-based learning, digital storytelling, pre-service teacher, speaking skills, digital literacy

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INTRODUCTION

The introduction of the Web 2.0 revolution adds nuance to education no exception for foreign language learning and provides more opportunities for learners to learn the functional uses of the target language. Language practitioners consider that developing students' communicative language skills faces certain challenges, especially the limited time and space during teaching so they utilize computer-mediated communication (CMC) in expanding target language practices outside the classroom (Blake, 2011; Mahdi, 2014). Meanwhile compared to traditional face-to-face learning, CMC offers an engaging and collaborative atmosphere since students participate actively in creating, sharing, and building second language knowledge together. As an impact, students strengthen their oral communication skills and achieve language competency (Kern et al., 2016).

CMC allows students to contribute equally to discussions, reduces anxiety, and allows them to express themselves more confidently than in face-to-face interactions (Namaziandost et al., 2021). CMC fosters learner autonomy by allowing students to participate actively during their timestamps in virtual communities. CMC also helps students to develop their decision-making skills (Lee, 2016). Blogs and podcasts from asynchronous CMC allow students to

concentrate more on developing foreign language skills tracking traces and content passages indefinitely when compared to synchronous CMC such as video conferencing. The consequence of this situation fosters students to be more reflective and generate more meaningful responses. However, owing to the absence of timestamps, a lack of self-discipline makes students less successful in maximizing time, and poor interpersonal contact thus this kind of mode is ineffective in encouraging students' social interaction and community building.

One sort of asynchronous CMC that is now popular for learning purposes, including foreign language acquisition, is digital storytelling. For crafting it, the creator needs several media combinations for example images, audio, and video (Robin & McNeil, 2012). Personal narratives, historical stories, and discussions on many themes relating to subjects are all examples of digital storytelling content. Learners are empowered by digital storytelling because it gives them a voice to express and exchange ideas in an open and participatory setting (Robin, 2016; Sadik, 2008). Unlike conventional formats that rely on paper, digital storytelling requires a wide range of skills integration, from collecting then arranging materials to writing scripts and composing sounds, images, and music, and uploading ready-made versions online.

Students use a range of literacy skills when creating digital storytelling, such as multimodal (integration of voice-over narration) and several types of multimedia communication (e.g., text, graphics, sound, video, and animation). They also use higher-order thinking such as critical thinking, reflective, and creative thinking to understand, synthesize, analyze, and implement knowledge in creating content (Hafford-Letchfield et al., 2018; Hur & Suh, 2012; Sylvester & Greenidge, 2009). In other words, their 21st-century skills (e.g., multiliteracy and problem-solving) are developed well in the process of digital storytelling creation. In addition, digital storytelling encourages student-centered learning and the creation of communities of practice. Students enjoy their writing and feel inspired to participate in the narrative production and sharing process. Creating digital storytelling encourages students to practice the target language in a genuine and unique mode.

Students combine text, images, audio recordings, videos, and music to create digital storytelling that contains certain topics of narration or personal information. The duration of stories is typically three to five minutes long. The stories are created by utilizing simple applications like Storybird, Animoto, Audacity, iMovie, and PhotoStory. Because of the several advantages outlined above, digital storytelling is gaining popularity among language practitioners.

Nowadays digital storytelling is widely used as an instruction for English Language Teaching (ELT). It is employed as language instruction in the context of ESL and EFL. For instance, some language practitioners use Digital Storytelling to help their students for developing speaking skills (Fu et al., 2021; Lee, 2016; Yang et al., 2022). Tanrikulu (2021) uses Digital Storytelling to help his students improve their level of writing competence, while Skinner & Hagood (2008) use digital stories to help students build their writing literacy skills. Several studies also showed that Digital Storytelling contributed to others' language skills achievement i.e vocabulary (Har et al., 2019; Kristiawan et al., 2022; Sulistianingsih & Aflahatun, 2021), reading (Rahimi & Yadollahi, 2017; Sulistianingsih, 2021), and digital literacy (Churchill, 2020; Churchill et al., 2008). Several studies also exposed that digital stories support students' listening comprehension (Lim et al., 2022; Ramírez Verdugo & Alonso Belmonte, 2007; Tabieh et al., 2021). Similarly, Tsou et al.,

(2006) observed that students improved in narrative comprehension and sentence complexity in tale recall.

Several ESL and EFL research has shown that teaching models and strategies which is employed in Digital Storytelling projects in second and foreign language schools are successful. However, there has been no research investigating how Digital Storytelling in the context of teaching advanced English at the university level affects speaking skills, especially among students whose mother tongue is Indonesian. Students' opinions about the use of English in improving speaking skills have also never been studied. Thus, this study aimed to find out how digital storytelling creation through project based instruction, encourages the development of students' speaking skills based on students' perceptions.

METHODS

This study recruited 28 pre-service teachers to participate in the research project. Those pre-service teachers were 19 female and 9 male. They were in the fifth semester by the time the research was conducted. Those participants studied in the English Education Study Program at one of the private universities located in Central Java, Indonesia. The study was conducted in the EFL context. The study was done in the ICT in ELT course. The participants were already familiar with technology (tech savvy), especially in editing images, audio, and video. They had already participated in the creation of a digital storytelling project when they were in the second semester of the extensive reading course. Some of them had already been taught about the creation of Podcast and Audiobook projects through the collaboration of the Startup Company and the University.

The study was set on one group design which means there was only an experimental group consisting of 28 participants. The research project was started in the early odd semester. The participants had four meetings, and this project is still running. The first and second meetings were filled with materials on how to create digital storytelling. Even though they had already created digital storytelling before in their second semester, the application was expanded and they found that there was much more interesting, friendly use, and advanced to choose from their last application which was used in the extensive reading course.

The third and fourth meetings were filled with discussions on the stories that they would choose as the content of digital storytelling. The applications that the students chose were also discussed in this meeting. Several applications that they utilized in creating digital storytelling were Audio Editor, Audacity, Ibis Paint, CapCut, Gatcha, Autodesk sketchbook, wave editor, Audio Lab, and Kinemaster. There was no intervention in students' preferences in choosing their application for creating digital storytelling.

The ICT in ELT class was conducted once a week, and the duration of each meeting need 100 minutes. Instructors monitored the progress of students' digital storytelling creation in class through the online mode of google meet. Students were asked to form their groups. Each group consisted of 3 to 4 students. They were free to choose friends in the group so that they feel comfortable communicating during completing the project. In each meeting, two groups were asked to present their project progress. They presented the story that was carried out, and what application was chosen to edit sound, images, and videos. They were also asked to demonstrate a sketch of their project. How they would operate the application and why the application was chosen among the many applications available. This was intentionally done so that students from other groups got inspiration from their friends who had presented their sketch projects.

This study obtained data from 28 students not only from interviews, but the observation also done during the sessions in class and out of class. There were 5 weeks of sessions in class and these sessions would still be continued. In each session of class, there were two digital stories were presented by the participants in the class. The instructor made the observations twice a week. There had been one and half hours of the session outside of school hours and outside the classroom setting from a total of ten observations. The data collection was from two semi-structured interviews with 28 pre-service teachers as a participant. This decision was made to make sure that participants' responses reached saturation point, that was to say the participants gave responses to all aspects of research problems on the use of digital storytelling for their speaking skills that were thoroughly examined.

The data end up at saturation when a researcher starts to listen to similar opinions,

viewpoints, and also responses coming from most or all of the participants (Alam, 2020). Meanwhile, it also indicates that the researcher might participate in data collection to assure data validity. During the interview session, those pre-service teachers as a participant response were both in English and Indonesian. These mixed language responses were allowed intentionally so that they could express themselves more clearly and effectively in the language. To ensure that their replies were thorough for everyone, all interview transcripts were translated and recreated in English for data analysis reasons. Thus, This study's interview transcripts were an updated version of the original transcripts. The transcripts were collected from the interview sessions. They had been examined and validated by two research fellow English teachers.

RESULTS AND DISCUSSION

This section explained the research results. After analyzing the data, it was found what the students felt about the impact of using digital storytelling to learn to speak in the target language. The observations during the process of making digital storytelling have a positive effect on their language skills, especially speaking skills were clear. The participants revealed the effect of using digital storytelling through the interview session. In their opinion, the use of digital storytelling as a tool to learn to speak positively impacted not only their vocabulary but also their pronunciation. They also revealed that their grammar had also gotten better. Arranging stories that needed moral values was challenging for them.

"... There are so many new words which is the first time I know their meaning. I can listen to my voice and improve my pronunciation, I think I will learn more, this digital storytelling is interesting ..." (S1)

"...I like this project, and I can learn to spell new and old words, and some applications to edit the voice..." (S2)

"...I can learn more for improving my spelling..." (S3)

"...I learn to listen and talk with my friends and others with good English..." (S4)

"...I will surely learn more and more words for speaking..." (S5)

"...first, I listen to those words then I will not wrongly pronounce them next time..." (S6)

"...it helps me improve my speaking, more over my grammar..." (S7)

“...my vocabulary is enriched, and now I know how to edit my video...” (S8)

The data from the observation indicated identical to data obtained from interviews. The researchers found that The students repeated their pronunciation of vocabulary and learned its meanings for the majority of the observation learning sessions. In addition, students were also seen trying to practice the pronunciation of words (trying to pronounce them like native speakers) with enthusiasm.

They seemed very focused and careful in practicing spelling words. S2 tried editing his voice while he learned seriously to spell words correctly. S3 tried to do the same things as S2 in spelling. S4, S5, and S7 did their best for speaking English. S6 tried listening and pronouncing some words. After a while, when S8 completed the workout, he appeared joyful and relieved. S8 informed his friends about the exercise's worth. The researchers could hear that the participants were happy and talking to each other about the project's progress. S6 expressed how happy they were when they thought that their pronunciation was almost like a native. S6 and S7 were very proud that their grammar and vocabulary improved well. Participants appeared to repeat themselves after spelling and pronouncing the vocabulary they have acquired whenever they click on hypermedia and vocabulary glosses. Some participants memorized the application's spelling and pronunciation.

Through observations and interviews, we also found that students' vocabulary was enriched along with the improvements in speaking, listening, reading, and writing because creating digital storytelling motivated the students to learn progressively whether it was during school hours or outside school hours. The participants stated that multimedia features that encouraged them to learn how to use the applications were animations, voiced narration, hyperlinked terminology, and multimodal glosses. According to them, knowing how to use those applications also improved their digital literacy. As stated by the students during the interview session,

“...I am motivated to learn more new words, and edit voice, images and video...” (S9)

“...creating digital storytelling makes me learn new words in a fun and interesting way” (S10)

“...I am very excited when drawing my pictures, I feel so amazing when I heard my voice, looks like I was somebody else. It releases

me when I know that my pronunciation is like a native...” (S11)

“...I learn so many new words and also learn to recall my old words when I want to express my ideas through the story I arranged” (S12)

“...I enjoy my music, my voice, and also my pictures, I feel awesome with my voice, this digital storytelling helps me improve my spelling and vocabulary interestingly...” (S13)

“...I enjoy my story, I am satisfied with my story, and I learn listening and speaking to others in good English...” (S14)

“...I like using it for learning language skills, especially for speaking and listening. Sorry, I mean reading and writing too...” (S15)

“...I will go on creating more and more stories, it gets me hooked because I love listening to my voice, and while making it I learned a lot. My English skills are getting better, especially my speaking skills...” (S16)

“...Since I was a youngster, I have enjoyed reading stories. I never imagined that one day I'd be able to write my stories. My English language skills, including speaking, listening, reading, and writing, have improved...” (S17)

“...I like animation since I was a kid, and I am proud of myself that now I can create it by myself. It is also interesting that my voice can be heard by others. I am willing to learn to speak English more” (S18)

“...I like drawing and coloring, crafting my story helps me learn vocabulary, grammar, and pronunciation at the same time with joy and no stress...” (S19)

“...learning English while being creative with animation is an unforgettable fun experience. I am more motivated to learn more English outside of school hours...” (S20)

“...it is fun, no need to worry to speak in English...” (S21)

“...yes, if there are more stories to be created then I am willing to create them all. It motivates me to learn English, I like it...” (S22)

“...now I know how to make my speaking get improve...” (S23)

“...it's nice when your story is seen by other people, that's why I'm very motivated to spend a lot of time learning English, especially spelling...” (S24)

“...yes I will watch the stories more and more, I enjoy my speaking...” (S25)

“...you can learn reading, listening, writing and speaking at the same time, it is joyful activities...” (S26)

“...I enjoy my speaking, and my digital

literacy also improved since I learn so many applications that suited my need...” (S27)

“...I enjoy my project as a wonderful journey, learning new applications for creating stories while learning English at the same time such as killing two birds with one stone...” (S28)

Furthermore, the creation of digital storytelling in the ICT in ELT class influenced students' interest and excitement for learning English. Students learned to create digital storytelling using a variety of apps. For EFL learners, motivation in learning was critical since it impacts their efficacy and accomplishment in learning. Finally, the effect on language acquisition could be utilized to demonstrate the effectiveness of digital storytelling in relevant English language learning. In other words, with the creation of digital storytelling, not only students' speaking skills were improved, but their reading, listening and writing skills were also improved. They enjoyed learning English, especially in speaking skills. They could spell better, their grammar was also getting better and their vocabulary was also getting richer. Results of the interview indicated that their digital literacy skills increased through learning various applications to create digital storytelling.

The finding of this research reported that the use of digital storytelling contributed the most significant positive influence on vocabulary and speaking learning (mentioned by most participants), the positive effect on other language skills as well as digital literacy could not be ignored either. The findings related to the previous studies proved that digital storytelling affected students' language learning positively, as well as high motivation to learn (Hava, 2019; Parsazadeh et al., 2021; Yang et al., 2022). Students practice speaking skills in an easy and fun way from the integration of voice-over narration in digital storytelling applications. This was consistent with the Modality Principle by Rizvic et al., (2019) which stated that students who learned from visual and verbal props performed better than those who only learned from visual props. Therefore, students could practice their speaking skills after learning to create digital storytelling. This was caused by students' being challenged to repeat the narration after voiceover in telling stories in different voice intonations, punctuation marks, exclamations, pauses, spelling, and pronunciation of the words they had learned. The students felt it is so ease to practice English fluently through imitating, and repeating after

the voiceover narration.

In addition, students expressed that practicing pronouncing the new vocabulary they learned correctly with a good tone of speech helps them to speak the target language fluently, this finding was the same as research reported by Oskoz & Elola (2016) who stated that storytelling helps learners at pronouncing words and provides a personal tone. Through the activity on the integration of visual and audio elements such as in voiceover narration and background, students learn to improve their listening comprehension. As mentioned by Kim & Lee (2018), creating digital storytelling provides students to practice listening comprehension. Creating digital storytelling involves visual representations activity students for example editing animations and colorful graphics into motion. Later they combined the audio, visual, and video elements for their digital storytelling creation. Through composing the stories, students learn to write down the sentences with correct grammar and they learn to listen to their voices. All of those activities imply that students learn to speak, listen, write and read at the same time. All of this evidence was in line with language practitioners' reports which state that digital storytelling contributed to students' language learning skills improvement in general (Anderson et al., 2018; Chung, 2021; Kim & Lee, 2018; Liu et al., 2018; Robin, 2008) and speaking skills particularly (Arroba & Acosta, 2021; Fu et al., 2021). In conclusion, the creation of digital storytelling empowers students to learn to speak. These findings also explain that creating digital storytelling stimulates students' learning motivation and digital literacy. The situation where students feel fun, no stress or pressure placed them in a relaxing, motivating, and conducive learning environment. It is believed that students who learn in a conducive environment will perform better than those who don't (Smeda et al., 2014).

CONCLUSION

The study exposed that students enjoy their project of creating digital storytelling. They felt fun and there was no anxiety during the process of the project. During the collaboration doing the project, they were communicating using two languages, Indonesian and English. Even if the target language is not fully used during the process of creating digital storytelling but at least they enjoy their work. Speaking English is not a scary activity for students. Students are

well motivated to learn by themselves, especially outside school hours. The study suggests that the activities during creating a digital storytelling project should be well prepared, and this study also recommends further research to use digital storytelling for teaching other languages, except English, and explore deeper on students' competencies such as emotional intelligence.

REFERENCES

- Alam, M. K. (2020). A systematic qualitative case study: questions, data collection, NVivo analysis, and saturation. *Qualitative Research in Organizations and Management: An International Journal*.
- Anderson, J., Chung, Y.-C., & Macleroy, V. (2018). Creative and critical approaches to language learning and digital technology: Findings from a multilingual digital storytelling project. *Language and Education*, 32(3), 195–211.
- Arroba, J., & Acosta, H. (2021). Authentic Digital Storytelling as Alternative Teaching Strategy to Develop Speaking Skills in EFL Classes. *LEARN Journal: Language Education and Acquisition Research Network*, 14(1), 317–343.
- Blake, R. J. (2011). Current trends in online language learning. *Annual Review of Applied Linguistics*, 31, 19–35.
- Chung, M.-H. (2021). Digital Storytelling Project for Language Teachers: Using Personal Narratives and Technology for Authentic Learning Experience. In *Interdisciplinary Approaches Toward Enhancing Teacher Education* (pp. 50–68). IGI Global.
- Churchill, N. (2020). Development of students' digital literacy skills through digital storytelling with mobile devices. *Educational Media International*, 57(3), 271–284.
- Churchill, N., Ping, L. C., Oakley, G., & Churchill, D. (2008). Digital storytelling and digital literacy learning. *Proceedings of International Conference on Information Communication Technologies in Education (ICICTE)*, 418–430.
- Fu, J. S., Yang, S.-H., & Yeh, H.-C. (2021). Exploring the impacts of digital storytelling on English as a foreign language learners' speaking competence. *Journal of Research on Technology in Education*, 1–16.
- Hafford-Letchfield, T., Dayananda, A., & Collins, D. A. (2018). Digital storytelling for interprofessional collaborative practice to develop quality and service improvements. *Social Work Education*, 37(6), 804–812.
- Har, A. L. C., Mohamad, J. Z. A., & Jamal, S. 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.
- Hava, K. (2019). Exploring the role of digital storytelling in student motivation and satisfaction in EFL education. *Computer Assisted Language Learning*, 1–21.
- Hur, J. W., & Suh, S. (2012). Making Learning Active with Interactive Whiteboards, Podcasts, and Digital Storytelling in ELL Classrooms. *Computers in the Schools*, 29(4), 320–338. <https://doi.org/10.1080/07380569.2012.734275>
- Kern, R., Ware, P., & Warschauer, M. (2016). Computer-mediated communication and language learning. In *The Routledge handbook of English language teaching* (pp. 542–555). Routledge.
- Kim, H., & Lee, J. H. (2018). The Value of Digital Storytelling as an L2 Narrative Practice. *Asia-Pacific Education Researcher*, 27(1). <https://doi.org/10.1007/s40299-017-0360-3>
- 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.
- Lee, L. (2016). Autonomous learning through task-based instruction in fully online language courses. *Language Learning & Technology*.
- Lim, N. Z. L., Zakaria, A., & Aryadoust, V. (2022). A systematic review of digital storytelling in language learning in adolescents and adults. *Education and Information Technologies*, 1–31.
- 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(4), 913–935.
- Mahdi, H. S. (2014). The Impact of Computer-Mediated Communication Environments on Foreign Language Learning: A Review of the Literature. *Teaching English with*

- Technology*, 14(2), 68–87.
- Namaziandost, E., Razmi, M. H., Hernández, R. M., Ocaña-Fernández, Y., & Khabir, M. (2021). Synchronous CMC text chat versus synchronous CMC voice chat: impacts on EFL learners' oral proficiency and anxiety. *Journal of Research on Technology in Education*, 1–18.
- Oskoz, A., & Elola, I. (2016). Digital stories: overview. *Calico Journal*, 33(2), 157–173.
- Parsazadeh, N., Cheng, P.-Y., Wu, T.-T., & Huang, Y.-M. (2021). Integrating computational thinking concept into digital storytelling to improve learners' motivation and performance. *Journal of Educational Computing Research*, 59(3), 470–495.
- Rahimi, M., & Yadollahi, S. (2017). Effects of offline vs. online digital storytelling on the development of EFL learners' literacy skills. *Cogent Education*, 4(1), 1–13. <https://doi.org/10.1080/2331186X.2017.1285531>
- Ramírez Verdugo, D., & Alonso Belmonte, I. (2007). *Primary teachers' insights on the use of the Internet in their English as a foreign language lessons: A research case study*.
- Rizvic, S., Boskovic, D., Okanovic, V., Slijivo, S., & Zukic, M. (2019). Interactive digital storytelling: bringing cultural heritage in a classroom. *Journal of Computers in Education*, 6(1), 143–166.
- Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory into Practice*, 47(3), 220–228. <https://doi.org/10.1080/00405840802153916>
- Robin, B. R. (2016). The power of digital storytelling to support teaching and learning. *Digital Education Review*, 30, 17–29.
- Robin, B. R., & McNeil, S. G. (2012). What educators should know about teaching digital storytelling. *Digital Education Review*, 22(1), 37–51. <https://doi.org/10.1016/j.compcom.2012.01.002>
- Sadik, A. (2008). Digital storytelling: A meaningful technology-integrated approach for engaged student learning. *Educational Technology Research and Development*, 56(4), 487–506. <https://doi.org/10.1007/s11423-008-9091-8>
- Skinner, E., & Hagood, M. C. (2008). Developing literate identities with English language learners through digital storytelling. *The Reading Matrix: An International Online Journal*, 8(2).
- Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the classrooms: a comprehensive study. *Smart Learning Environments*, 1(1), 1–21.
- Sulistianingsih, E. (2021). The impact of using digital storytelling on higher education students' reading comprehension and learning motivation. *UNNES-TEFLIN National Seminar*, 4(1), 252–261.
- Sulistianingsih, E., & Aflahatun, N. (2021). Digital Storytelling: Computer Based Learning Activity to Enhance Young Learner Vocabulary. *SSRN Electronic Journal*, 1–9. <https://doi.org/10.2139/ssrn.3736914>
- Sylvester, R., & Greenidge, W. (2009). Digital storytelling: Extending the potential for struggling writers. *The Reading Teacher*, 63(4), 284–295.
- Tabieh, A. A. S., Al-Hileh, M. M., Abu Afifa, H. M. J., & Abuzagha, H. Y. (2021). The Effect of Using Digital Storytelling on Developing Active Listening and Creative Thinking Skills. *European Journal of Educational Research*, 10(1), 13–21.
- Tanrikulu, F. (2021). Students' perceptions about the effects of collaborative digital storytelling on writing skills. *Computer Assisted Language Learning*, 1–16.
- Tsou, W., Wang, W., & Tzeng, Y. (2006). Applying a multimedia storytelling website in foreign language learning. *Computers & Education*, 47(1), 17–28.
- Yang, Y.-T. C., Chen, Y.-C., & Hung, H.-T. (2022). Digital storytelling as an interdisciplinary project to improve students' English speaking and creative thinking. *Computer Assisted Language Learning*, 35(4), 840–862.