

Digital Story Telling Based on Multimodal Elements on EFL Learners' Speaking Performance

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ARTICLE INFO

Article history:

Received October 11, 2021

Revised October 13, 2021

Accepted May 30, 2022

Available online June 25, 2022

Kata Kunci:

Digital, Mendongeng, Multimodal;
Kinerja Berbicara

Keywords:

Digital, Storytelling, Multimodal;
Speaking Performance



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ABSTRAK

Penelitian ini bertujuan untuk menguji keefektifan storytelling digital berbasis elemen multimodal terhadap performa berbicara pembelajar EFL. Desain kuasi-eksperimental dengan kelompok kontrol dan kelompok eksperimen digunakan dalam penelitian ini. Sampel terdiri dari 40 mahasiswa Pendidikan Guru Pendidikan Anak Usia Dini. Kedua kelas tersebut mempelajari Bahasa Inggris untuk Pendidikan Anak Usia Dini. Sampel pada kelompok eksperimen diberi perlakuan digital storytelling berbasis elemen multimodal dan muatan lokal. Kelompok kontrol mempelajari storytelling berdasarkan video konvensional. Instrumen yang digunakan adalah rubrik Cambridge English Qualification, angket Likert-Scale, dan wawancara. Analisis data untuk kemampuan berbicara siswa terdiri dari uji interreliabilitas, uji normalitas, uji homogenitas, uji linieritas, dan ANCOVA. Prosedur analisis tematik mengadopsi pengkodean induktif dan deduktif. Hasil penelitian menunjukkan bahwa digital storytelling dengan elemen multimodal efektif meningkatkan kinerja berbicara peserta didik EFL. Statistik deskriptif menunjukkan bahwa siswa dalam kelompok eksperimen ($M=85,4$) secara signifikan mengungguli kelompok kontrol ($M=76,9$) dalam kemampuan berbicara mereka yang dimediasi oleh digital storytelling. Para siswa merasakan persepsi positif tentang digital storytelling berdasarkan elemen multimodal dalam belajar bahasa Inggris dalam hal kenikmatan fitur multimodal seperti visual dan auditori dan nilai-nilai yang digambarkan dari nilai-nilai lokal. Studi ini juga mengeksplorasi beberapa hambatan yang dirasakan dalam menggunakan digital storytelling dalam berbicara, seperti literasi digital dan teknis, keterampilan bahasa, kreativitas dan pemikiran inovatif, dan pembelajaran kolaboratif.

ABSTRACT

Educators must adapt the contextual model of teaching with educational technology to improve teaching and learning English quality. Digital storytelling is one of meaningful technology that can enhance students' speaking skills. This study examined the effectiveness of digital storytelling based on multimodal elements on EFL learners' speaking performance. A quasi-experimental design with a control and experimental group was employed. The sample consisted of 40 students of Teacher Education of Early Childhood Education. Both classes studied English for Early Childhood Education. Sample in the experimental group was treated by digital storytelling based on multimodal elements and local contents. The control group studied the storytelling based on a conventional video. The instrument used were speaking rubric, Likert-Scale questionnaires, and interview. Data analysis for students' speaking performance consisted of the inter-reliability test, normality test, homogeneity, test of linearity, and ANCOVA. The procedures of thematic analysis adopted inductive and deductive coding. The result of study shows that digital storytelling with multimodal elements effectively enhances EFL learners speaking performance. The descriptive statistics show that students in the experimental group ($M=85.4$) significantly outperformed the control group ($M=76.9$) on their speaking performance by digital storytelling. The students perceived a positive perception of digital storytelling based on multimodal elements in learning English in terms of enjoyment of multimodal features such as visual and auditory and values depicted from local values. The study also explored several perceived obstacles in using digital storytelling in speaking, such as digital and technical literacy, language skill, creativity and innovative thinking, and collaborative learning.

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1. INTRODUCTION

The dynamic changes of educational technology in language learning have assisted many EFL educators worldwide to be creative to select, provide and utilize the digital platforms in language learning. The rapid advancement of technology should also be synergized with multimodal elements. Educators must adopt and adapt the contextual model of teaching and learning embedded with educational technology as a robust way to improve teaching and learning English quality (Hwang et al., 2016; Schmier, 2021). Integrating local content within the digital storytelling can help the students better learn the language as the ideas have a solid connection to their daily, cultural, and social lives (Hava, 2019).

Digital storytelling can be defined as the cognitive process of narrative stories and amplification in multimodal platforms that highlight the entailment of meaning and values to be meaningful stories (Gregori-Signes, 2014). Storytelling can function as a favorable education tool to share knowledge and pass social-cultural heritage to a broader audience and future inheritance (Anderson et al., 2018; Smeda et al., 2014). The effect of technological sophistication allows storytelling to be presented through digital media platforms. Digital storytelling provides a meaningful technology by combining texts, images, and audio to be a creative form of storytelling to enhance students' speaking skills (Somdee & Suppasetsee, 2013). By utilizing this technology, the educators can offer the pedagogies possibilities to strengthen their cultural identity in more practical and engaging activities (Staley & Freeman, 2017).

The application of digital storytelling in English language learning is affirmed by the constructivist learning theory and the multiliteracies of cultural values of the society. The process of learning mediated by digital storytelling can encourage students' personal and cultural identity (Bechter & Swierczek, 2017; Stanley, 2018). The significance of digital literacy is essential as one of the 21st-century life skills for university students since they must be able to address their ideas in the digital platform (Chan et al., 2017). It is also critical that students must be able to develop their story telling skills regarding the advancement of technology in language learning (Ribeiro, 2015). Digital storytelling exhibits some benefits for language learning, such as enhancing linguistics communication, digital and learning skills, learning autonomy encouragement, and individual initiative (Gregori-Signes, 2014). Moreover, when students participate in digital storytelling, they can entail multimodal skills in four language skills: listening, reading, speaking, and writing. As a breakthrough in educational technology, digital storytelling can foster transformative-based technological learning that covers substantive material, critical thinking skills, technology literacy, and learning motivation (Moradi & Chen, 2019).

There are previous study that analyze the use of digital storytelling to scaffold an interactive learning environment and how it enhanced students' speaking skills and motivation by using pretest and posttest (Kallinikou & Nicolaidou, 2019). They proved that digital storytelling mediated by a web-based learning environment enhanced students' speaking skills for the attributes of grammar, syntax, vocabulary, and pronunciation, and motivation in terms of interest, importance, usefulness, and self-efficacy. Similarly, with other previous research that examined the effectiveness of authentic digital storytelling for fostering EFL learners' speaking in the university by focusing on communicative strategies (Arroba & Acosta, 2021). The study's findings emphasized the method of delivery, media used for the storyboard, and delivery of organization and message quality. They also explored the cultivation of digital storytelling to students' confidence and attitudes, and it could facilitate language skills learning for conducive learning environment. The study of creating digital storytelling as a process is still very limited, and digital literacy as one potential obstacle is worth investigating (Nair & Yunus, 2021; Sanchez-Lopez et al., 2020). To contribute to the emerging technology for language learning, this current study aimed to undertake the study to focus on the effectiveness of digital storytelling mediated by local content based on the multimodal elements to improve students' speaking performance in learning English as a foreign language. This study did not merely analyze the effectiveness of digital storytelling on students' speaking performance and perception of its implementation but also entailed the perceived obstacles on the process of creating digital storytelling.

2. METHOD

The method of this research was a quasi-experimental design with a control and an experimental group. A speaking rubric by Cambridge English Qualification: Assessing Speaking Performance – Level A2, which covers speaking performance assessment was used. The rubric was used to collect quantitative data on students' speaking performance on digital storytelling. Questionnaires on students' perceptions and semi-structured interviews were also used to corroborate the research findings. The relevancy of using this method was in response to the research questions that need the integrations of two forms of data and the results (Creswell & Clark, 2018).

The samples of the study were taken from two customized classes from Teacher Education of Early Childhood Education Faculty by using a non-random sampling technique. Each class consisted of 20

students. A control group was given a lecture on storytelling by using the conventional video. In contrast, an experimental group was assigned to design digital storytelling by incorporating local values based on multimodal elements. The digital platform of digital storytelling utilized PowToon Education. Teaching storytelling was carried out for both the control and experimental group. After two meetings of treatments, the students were assessed to examine the effectiveness between the control and the experimental group. Furthermore, the students' perception was also asked to posit their ideas on using digital storytelling based on multimodal elements on speaking skills. The final procedures examined students' perceived obstacles when experiencing this activity. This study sought to examine students' speaking performance using the speaking rubric. The first research instrument was Cambridge English Qualification: Assessing Speaking Performance – Level A2, which covers speaking performance assessment. The second research instrument was the questionnaires about students' perception of digital storytelling based on multimodal elements by 5-Point Likert-Scale. The final research instrument was a semi-structured interview. Data analysis for students' speaking performance consisted of the inter-reliability test, normality test, homogeneity, test of linearity, and ANCOVA. Questionnaires were tested using validity and reliability tests and descriptive statistics of students' perception. The result of the interview was transcribed and coded to produce the emerging themes. The procedures of thematic analysis adopted inductive and deductive coding by (Xu & Zammit, 2020).

3. RESULT AND DISCUSSION

Result

Before the ANCOVA computation, the first early step was to examine whether the data met ANCOVA analysis's basic statistical assumption. There are statistical assumptions that need to be fulfilled in ANCOVA analysis: inter-rater reliability, normality test, homogeneity of variances test, and linearity test to find out the test of between-subject effects. As the test entailed the speaking activity, the pretest and posttest results were examined to determine the inter-rater reliability to avoid bias and subjectivity. The speaking performance test on digital storytelling was given by instruction by the same rubric. The score used a continuum model with a correlation coefficient technique. Rater one and rater two pretest-posttest are show in [Table 1](#) and [Table 2](#).

Table 1. Rater 1 and Rater 2 Pretest Experiment

		Rater 1	Rater 2
Rater 1	Pearson Correlation	1	0.935
	Sig. (2-tailed)		0.000
	N	20	20
Rater 2	Pearson Correlation	0.935	1
	Sig. (2-tailed)	0.000	
	N	20	20

Table 2. Rater 1 and Rater 2 Posttest Experiment

		Rater 1	Rater 2
Rater 1	Pearson Correlation	1	0.931
	Sig. (2-tailed)		0.000
	N	20	20
Rater 2	Pearson Correlation	0.931	1
	Sig. (2-tailed)	0.000	
	N	20	20

Based on [Table 1](#) and [Table 2](#), the correlations showed that rater one and rater two pretest-posttest experiments, rater one and rater two pretest-posttest control have almost perfect reliability degree based on the interpretation of the level of agreement (Landis & Koch, 1977). A normality test was conducted to ensure the normality of the distribution of the score. As the sample consisted of below 50 students, the Shapiro-Wilk test was run. The normality test is show in [Table 3](#).

Table 3. Test of Normality for the Experimental and Control Groups in Speaking Performance with Digital Storytelling in Pretest and Posttest

	Class	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest	Experimental Class	0.970	20	0.753
	Control Class	0.867	20	0.110
Posttest	Experimental Class	0.969	20	0.734
	Control Class	0.926	20	0.128

Based on Table 3 displays the result of experimental pretest group .0753 (Sig. > α), pretest control group 0.110 ((Sig. > α), posttest experimental group 0.734 ((Sig. > α), and posttest control group 0.128 (Sig. > α). It can be concluded that the score of both the experimental and control group was distributed normally. After the assumption of normality test was fulfilled, a test of homogeneity was run. The homogeneity test is show in Table 4.

Table 4. Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	1.547	1	38	0.221
	Based on Median	1.858	1	38	0.181
	Based on Median and with adjusted df	1.858	1	37.055	0.181
	Based on trimmed mean	1.595	1	38	0.214
Posttest	Based on Mean	0.385	1	38	0.538
	Based on Median	0.496	1	38	0.486
	Based on Median and with adjusted df	0.496	1	34.345	0.486
	Based on trimmed mean	0.392	1	38	0.535

Based on Table 4, the output of Sig. based on Mean of the pretest was 0.221 > 0.05 and posttest 0.538 > 0.05. The results show that the homogeneity assumption was fulfilled, and the variances were homogenous. Before ANCOVA was conducted, a linearity test was run to examine the linearity of covariate with dependent variables. The result of linearity test is show in Table 5.

Table 5. Test of Linearity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1821.107 ^a	2	910.554	60.023	0.000
Intercept	192.042	1	192.042	12.659	0.000
Pretest	1273.507	1	1273.507	83.949	0.000
Class	500.010	1	500.010	32.960	0.000
Error	561.293	37	15.170		
Total	219650.000	40			
Corrected Total	2382.400	39			

Based on Table 5, displays the score of pretests as covariate variable with Sig. 0.000 < α 0.05, which means that there is a linear correlation between the dependent variable. Tests of between-subjects effects were also used to test the hypothesis. Based on the results, the Sig. of the variable class was 0.000 < 0.05, which entails that the null hypothesis was rejected and the alternative hypothesis was accepted. There is a significant difference in speaking performance on students between digital storytelling with multimodal approach and conventional storytelling. ANCOVA was conducted to examine the effectiveness of digital storytelling based on multimodal elements on EFL learners' speaking performance. ANCOVA was run to test the null hypothesis that there is no significant difference in speaking performance on students between digital storytelling with multimodal approach and conventional storytelling. The alternative hypothesis is that there is a significant difference in speaking performance on students between digital storytelling with multimodal approach and conventional storytelling. The result of ANCOVA test is show in Table 6.

Table 6. ANCOVA Test

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	17.161	5.832	2.942	0.000	5.344	28.979
Pretest	0.815	0.089	9.162	0.000	0.635	0.995
[Class=1.00]	7.074	1.232	5.741	0.000	4.577	9.571
[Class=2.00]	0					

Based on Table 6, the output table of parameter estimates shows that Sig = 0.000 < 0.05, which signified that digital storytelling with multimodal elements effectively enhanced speaking performance to EFL learners. Descriptive Statistics of Control Group is show in Table 7.

Table 7. Descriptive Statistics of Control Group

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	20	41.00	70.00	65.7000	9.02103
Posttest	20	70.00	83.00	76.9000	3.71200
Class	20	2.00	2.00	2.0000	0.00000
Valid N (listwise)	20				

The descriptive statistics in Table 7 shows that the mean score of students' speaking performance in the pretest with conventional storytelling was 65.7, while in the posttest, the mean score was 76.9. The descriptive statistics of the experimental group is shown in Table 8.

Table 8. Descriptive Statistics of Experimental Group

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	20	56.00	77.00	68.0500	6.38646
Posttest	20	80.00	92.00	85.4000	3.87162
Class	20	1.00	1.00	1.0000	0.00000
Valid N (listwise)	20				

Based on Table 8, the mean score of students' speaking performance in the pretest was 68.05. In contrast, the mean score of the posttest after treatment with digital storytelling increased significantly to 85.4. Then students were asked to opine their perceptions of the teaching and learning process. Result of students' perception is shown in Table 9.

Table 9. Questionnaires Items of Students' Perception on Digital Storytelling

No	Items of questionnaire	Mean score	Standard Deviation
1	I have a good perception of digital storytelling as a tool for learning English language speaking	4.35	0.58714
2	I enjoy speaking the stories in English with digital platforms	4.4	0.50262
3	I enjoy making stories in English with multimodal elements such as images, and visual elements	4.55	0.51042
4	I enjoy acting out parts of the stories read by reciting the story	4.35	0.58714
5	I enjoy learning English with local content and content in digital storytelling	4.35	0.48936
6	I enjoy learning English with multimodal elements	4.5	0.51299
7	Visual images make me interested in learning English	4.35	0.48936
8	Auditory elements make me interested in learning English	4.35	0.48936
9	I would like digital storytelling to be included in learning English.	4.35	0.67082

Based on Table 9, the majority of them conveyed strong agreement on using digital storytelling in learning English to enjoy the multimodal elements. They perceive it as good to have digital storytelling as a tool for learning English (M=4.35), they enjoy speaking the stories mediated by digital storytelling (M=4.4), and they enjoy making stories where they combine multimodal elements such as images and visual elements (M= 4.55). Additionally, they enjoy acting out parts of the digital storytelling (M=4.35), and they

enjoy learning English with local content in digital storytelling ($M=4.35$). Finally, they would like to have digital storytelling in learning English (4.35). Then the data were taken and analyzed by transcribing and coding procedures of the interview. The procedures consisted of transcribing the interview, assigning categories, coding and highlighting essential themes. Then, the analysis and interpretation were deduced to get the final coding. Students' perceived obstacles are categorized into four main categories, namely, digital and technical literacy, language skills, creativity and innovative thinking, and collaborative learning.

Discussion

The primary data sources indicated that digital storytelling based on multimodal elements and local content significantly enhanced students' speaking performance (Kingsley et al., 2019). In this study, the students were exposed to the technical and substantial skills to create digital storytelling by utilizing multimodal elements such as visual and auditory elements. On the one hand, EFL learners who undergo the process of online digital storytelling could improve their literacy skills and technology literacy as the technical skills as they spend more time with technology in the process of making the digital storytelling (Rahimi & Yadollahi, 2017). Learning activity mediated by digital storytelling can situate the creative process of selecting a topic, penning a script, and relating a lively tale; it can also arouse students' engagement to perform outstandingly speaking skills (Razmi et al., 2014). The way learners construct knowledge, think, reason, and reflect on is uniquely shaped by their relationship with others (Vygotsky, 1978). Through digital storytelling via PowToon, students can be encouraged to achieve developmental milestones through social and peer interaction (Psomos & Kordaki, 2012). From this theoretical framework, learning with digital storytelling is the outcome of learning with dialogical interactions between learners who were engaged and motivated in knowledge formation (Niemi & Multisilta, 2016).

It is in line with previous study that revealed authentic stories depicted from local cultures could create a meaningful learning ambience that automatically enabled the students to experience practical and creative English language learning (Yang et al., 2020). This empirical result implied that authentic material attributes for digital storytelling were worth considering when educators applied digital storytelling for language learning (Barkhuizen, 2018). In terms of assessing the speaking performance, this current study examined the speaking performances based on Cambridge English Qualification: Assessing Speaking Performance – Level A2. Interestingly, some other studies used a different rubric to assess the students' speaking performance, one of which was a study that examined the predicting factors, namely, the assessment of the language by using an analytic rubric (Kang & Kim, 2021). They investigated the multiple models of digital storytelling for the students. The results can be used to analyze the compatible predicting factors of utilizing language learning for the learners. Therefore, future researchers can consider the compatibility and suitability of the rubric when assessing students' speaking performance by conceiving the attributes of the EFL learners.

The use of digital storytelling impacts students' technology literacy and social communication skills that can create a meaningful learning process. Indeed, digital storytelling can be a personalized approach because the students are driven to have peer collaborations in terms of creative scenarios and apply innovative learning practices (Kaminskiené & Khetsuriani, 2019). This previous study also underpinned the idea of using a more personalized digital storytelling platform to experience more engaging activities as they are cultivated with their cultural identity. From this empirical data, digital storytelling cannot be simply used as the adoption theory. Still, the adaptation must be accommodated to suit the learners' cultural knowledge and the expected outcomes. The integration of digital storytelling in today's language learning should be coherent with humanities foci that underpin the interactivity between students, critical thinking, nonlinearity, digital literacy, social presence, attitude, and students' participation (Barber, 2016; Nam, 2016).

Additionally, integrating local values based on a multimodal approach can synergize the elements in digital storytelling by combining visual, sound, movement, print-based text, and technology with local content elements (Kim et al., 2021). It can help EFL learners to obtain nuanced comprehension of the topic and improve their sense of accomplishment and self-esteem (Choi & Yi, 2016). The integration of multimodal elements will automatically help EFL learners develop their communicative skills by organizing their ideas, impersonating questions, conveying opinions, and creating stories in a learner-centred environment (Razmi et al., 2014; Saripudin et al., 2021). From these theories and empirical data, educators can utilize digital storytelling as a meaningful technology in the classroom (Marchetti & Cullen, 2015). They can potentially foresee the hindrances when using it in nonmainstream EFL learners (Staley & Freeman, 2017).

Based on some empirical studies, this current study underpinned the effectiveness of digital storytelling, particularly by the extent of how local content and multimodal elements contributed to their language learning process. With multimedia elements, digital storytelling can give lively, interactive, and

resilient methods for making a storyboard, narrating, and accomplishing the storytelling (Tuna & Razi, 2016). The limitations of the study can be traced from the delivery of the teaching and learning process through online platforms. The students were not explicitly situated with peer assessment from their friends. The lecturer gave the evaluation and feedback without using an exit survey for the stages of digital storytelling. The sample of the study was also relatively small, so the data sources cannot be generalized. Further study can integrate peer assessment with exit survey to give comprehensive evaluation and involve a larger proportional sample to provide generalizability of the data sources.

4. CONCLUSION

As mentioned in this study, a limited study examined the empirical results of digital storytelling embedded with multimodal elements and local contents. This study posits some empirical outcomes showing the feasibility and suitability of using digital storytelling based on multimodal elements and local content on students' speaking performance. This study provides initial data that digital storytelling can be utilized as a pedagogical tool for enhancing students' speaking performance. The results show that the experimental group significantly outperformed the control group. It implicated that digital storytelling incorporated with multimodal elements and local contents contributed enhancement in students' speaking performance in the aspects of sufficient control of simple grammatical forms, appropriate vocabulary, and sufficient control of phonological features when using utterances and word levels. Both control and experimental groups used similar materials for creating storytelling and experienced process and feedback activities. It was believed that the contributing factor to students' enhancement in speaking performance was the integration of digital applications mediated by multimodal elements and values depicted from local values.

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