

Enhancing Reading Comprehension and Writing Skills among Taiwanese Young EFL Learners Using Digital Storytelling Technique

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Abstract: Few studies have examined the effect of Digital Storytelling technique (DST) on EFL young learners' reading and writing performance. This study thus aims to investigate the effects of DST on vocabulary learning, reading comprehension and writing skill development of 27 EFL sixth graders in Taiwan. In a three-period instruction, the participants were first required to read two self-created digital storybooks on the theme "Christmas" on the *Storybird* platform; next, they were given a pretest for vocabulary and reading comprehension based on the two instructional storybooks. Through the explanation of vocabulary and the use of a question-and-answer approach to facilitate comprehension, the participants received subsequent reading instruction focusing on examining the logical sequences of the two storybooks. The posttest was held at the end of the reading instruction. In the second session, they created one storybook on the theme of Christmas on *Storybird* through teacher-student and student-student collaboration. The results of a repeated measure *t*-test showed that the students improved their vocabulary and reading comprehension significantly after receiving the instruction using digital storybooks. Further analysis of the audio and video recording revealed that the students developed their writing skills through their prior reading experience of the two storybooks, the teacher-student collaboration and even the student-student interaction.

Keywords: Digital storytelling technique, reading comprehension, writing skill development, young EFL learners

1. Introduction

1.1 Digital Storytelling

Digital storytelling technique (DST) is defined as traditional storytelling equipped with technology devices, and involves interaction between readers and writers. In recent years, researchers of Computer Assisted Language Learning (CALL) have suggested that DST is one type of technique which can enhance students' listening, speaking, reading and writing skills (Abdollahpour & Maleki, 2012; Abidin, Pour-Mohammadi, Souriya, Tiang, & Kim, 2011; Xu, Park, & Baek, 2011; Yoon, 2012). Ohler (2008) proposed that DST can enhance students' writing skill development since DST instruction requires students to write the story and negotiate the meaning with the teacher and their peers at the same time. Furthermore, Suleiman (2011) found that DST benefited Malay children's listening, speaking and reading skills through the interaction with the teacher and peers.

Regarding the relationship between DST and writing skill development, previous studies have suggested that the combination of technology-integrated learning and social constructivism can achieve desired educational objectives (Koohang, Riley, Smith, & Schreurs, 2009; Neo & Neo, 2010; Sadik, 2008; Yang, & Wu, 2012). Kessler (2009) assigned writing tasks for 40 Mexican pre-service teachers on Wiki, and then asked them to provide comments and feedback to one another. After peers' editing, the participants started to self-edit their composition and then the researcher corrected the grammatical errors of their final version. Questionnaire result revealed that the participants were

willing to contribute to the collaborative task in terms of peer- and self-editing. Furthermore, through peer- and self-editing they gained much confidence on understanding the meaning of the contents instead of being distracted by the errors they made.

In a recent study, Yang and Wu (2012) explored the effects of DST on 110 Taiwanese EFL tenth graders' academic achievement, critical thinking and learning motivation. Students were randomly assigned to the DST instruction group or the traditional lecture-type instruction group. After implementing storytelling instruction to the two groups, students received the academic achievement test, including the vocabulary, grammar, listening, reading, and writing components. The results showed that the students receiving the DST instruction outperformed those receiving the lecture-type instruction on the listening, reading and writing test. Through social interaction with peers, the teacher and even the text itself, DST can thus enhance the experimental subjects' writing skill development. A review of prior studies revealed that most digital storytelling related studies adopted a text-first and multimedia-next approach for older students to tell or write their digital stories.

1.2 Reading-to-Writing Connection

In English learning, reading and writing are the skills related to written language, and usually young learners acquire reading skills, followed subsequently with writing skills, in elementary school. While reading and writing are two distinctive skills in English language learning, Stevens, Madden, Slavin, and Farnish (1987) proposed "Cooperative Integrated Reading and Composition" approach, in which reading activities are integrated with writing activities for students during acquisition of English. Additionally, Giesen (2001) stated that reading and writing reinforce each other and promote learning when they are integrated in classroom activities.

From the empirical end, Ito (2006) investigated the correlation between 68 Japanese EFL junior high school students' reading comprehension and writing performance. Students' reading skills were first evaluated through the reading test selected from Test of English for International Communication (TOEIC). Next, writing instruction was conducted to require students to write an English essay. The result revealed students' L2 reading skills affected their L2 writing skills, and the two skills are moderately linked with one another. Hence, reading skill is an important characteristic of writing skill since reading is the basis of writing, and writing is the interpretation of reading.

Izquierdo and Reyes (2009) investigated 119 Spanish undergraduate first year students' reading comprehension through reading articles on the blog. The students had to write down comments in English to negotiate the meaning of the articles with their group members. Questionnaire results revealed that using blog motivates students to read since blog provides an interactive environment and helps students become more autonomous in learning while becoming less dependent on the teacher.

Durukan (2011) investigated the effects of a "Cooperative Integrated Reading and Composition" technique on Turkish elementary school students' reading comprehension and written expression. The results showed that the students receiving the integrated instruction outperformed the students receiving the traditional instruction. Based on the above findings, instruction involving reading and writing activities is considered beneficial to young learners' language acquisition.

1.3 Introducing Storybird Digital Storytelling Website (<http://www.storybird.com>)

According to one of the hypotheses in Dual Coding Theory proposed by Paivio (2006), the nonverbal (images) and verbal codes (words) are functionally independent and can have additive recall effects. Therefore, the combination of digital images and words are assumed to have a positive effect on language learning.

Storybird is a digital storytelling website, with professional artists creating vivid pictures and authors writing storybooks. *Storybird* was established in 2009 and was developed by Mark Ury. It currently numbers at least two million members and includes five million storybooks. One hundred thousand schools have registered, a fact indicating that many teachers around the world implement *Storybird* in their classes. The website provides 19 theme categories which are closely related to young learners' life experience, including Adventure, Animals, Diary, Dreams, Education, Family, Friends, Guides, Health, Humor, Life, Literary, Magic, Mystery, Poetry, Romance, Scary, School Life, and Sci-Fi/Fantasy. Moreover, 5 age levels have been provided to categorize the storybooks: Preschool (1-4), Kid (5-7), Tween (8-12), Teen (13-19) and Adult. Additionally, *Storybird* provides three kinds of identifications, including "Regular Users", "Teachers" and "Students." Review papers have suggested that *Storybird* is an art-inspired digital storytelling website that is easy to use, free of charge, collaborative/social, sharable, and classroom-friendly for young learners

(Ryder, 2012; Ullman, 2012). *Storybird* was recently evaluated by Kuo, Chiang, Lin, Cao and Yen (2012) as an appropriate website for promoting Chinese young EFL learners' collaborative writing skills due to better learner fit, better teacher fit, and the "Class Library" and "Discussion" supplementary functions. Regarding reading-to-writing connection, *Storybird* strongly emphasizes reading others' digital storybooks as input and encourages an image-first and text-next approach to motivate learners to produce digital storybooks as output. However, no empirical studies have been conducted to test the effects of using *Storybird* as teaching/learning materials to promote EFL young learners' vocabulary acquisition, reading comprehension and writing development. Differing from most of the previous DST related studies which adopted the text-first and image/video/audio next approach, *Storybird* conversely encourages an image-first and text-next approach. For elementary school young learners, it is believed that art-inspired images or photos are more appropriate in facilitating their four skill development (Wang, 2010; Yang & Wu, 2012).

This study thus aims to investigate the effects of DST on Taiwanese EFL sixth graders' reading comprehension and writing skill development. Two research questions will be answered in this study:

1. Is digital storytelling technique effective in improving Taiwanese EFL sixth graders' vocabulary learning and reading comprehension?
2. How is digital storytelling technique effective in enhancing Taiwanese EFL sixth graders' writing skill development?

2. Method

2.1 Participants

Twenty-seven sixth graders from one intact class in central Taiwan participated in this study. Their average age ranged from 11 to 12 years old. They have received English instruction from the third grade with 40 minutes and from fifth grade with 80 minutes per week. The participants' scores on the reading section of the Cambridge Young Learner English Starter Test (YLE) ranged from 16 to 100 points. The mean score was 70.41. According to the participants' YLE reading scores, the homeroom teacher randomly assigned them into four small groups to form mixed ability groups. Each group consisted of 6 to 7 members.

2.2 Materials

Teaching English to fifth and sixth graders in Taiwan elementary schools became compulsory starting 2001. According to the General Guidelines of Grade 1-9 Curriculum of Elementary School Education proposed by the Ministry of Education in Taiwan, culture teaching is a crucial part for English teachers to develop language learners' understanding of Western customs. In addition, cultural awareness has been claimed to be an important element of language learning (Chien, 2013). This study therefore used the *Storybird* platform for reading instruction in which two digital storybooks on the theme of Christmas were created by the first author (<http://storybird.com/books/christmas-day-235/>; <http://storybird.com/books/what-kind-of-gift-do-you-want-to-give-your-dog/>), modified by the second author, and proofread by a native speaker of English who has taught English in a university in Taiwan over twenty years. The vocabulary in each storybook was created referencing the Vocabulary Quotient (National Taiwan Normal University, 2009) to fit the participants' current vocabulary proficiency. Taking class time limit and the students' proficiency level into consideration, each digital storybook contained only 6 pages and each page included only one complete sentence. The images of the two storybooks were respectively selected from Shisher Naik's (2011) and Rebecca Shepherd's (2011) artworks.

2.3 Instruments

With a high reliability coefficient of .901, the first instrument was a self-developed pretest/posttest including ten vocabulary questions and ten comprehension questions. The vocabulary matching questions were designed by referencing Vocabulary Quotient (National Taiwan Normal University, 2009) to meet the students' current vocabulary level. The test consisted of ten English vocabulary items and twenty Chinese translations to reduce guessing. For reading comprehension, the students were asked to answer ten multiple-choice questions based on their understanding of the two

storybooks. The second instrument was a collaborative writing task which requires the students to create one digital storybook on the topic “Christmas” with the same theme as the reading task.

2.4 Procedures

This study was conducted on December 24th, 2012. The DST instruction was implemented in a classroom equipped with one personal computer with internet connection, one projector and screen. The experiment was a three-period instruction including five parts: introduction to the features and operation of the *Storybird* platform, a pretest of vocabulary and reading comprehension, DST instruction, a posttest identical to the pretest, and the teacher-student and student-student collaborative digital story creation. In the first period, the instructor introduced the three types of account provided by *Storybird*, the functions of the website, and how to create a digital story. In the second period, after the five-minute warm-up, the participants were required to read the first instructional digital storybook silently without any help for 3 minutes. In the following 7 minutes, they were asked to answer the ten vocabulary and reading comprehension questions on the answer sheet. Next, the instructor spent 10 minutes teaching the content of the digital storybook through the explanation of vocabulary and the use of a question-and-answer approach to facilitate comprehension as well as to examine the logical sequences of the storybook. At the end of the first period, the participants were given the posttest for the first storybook. In the second period, the participants received the same instructional process on the second digital storybook within 20 minutes.

Subsequent to the reading session, the four groups together spent 20 minutes creating one digital storybook on the same theme of Christmas with the instructor. After deciding on using the artwork of “Gooley S. A.” (2011) on the theme of Christmas as the writing assignment, the four groups together selected 8 digital images out of 111 digital pictures by taking the storyline into consideration. Each group first chose two images; next, each group brainstormed together and negotiated meaning with their group members or the class to create two sentences to fit in with their two chosen images. As a facilitator, the instructor provided some keywords or prompts for them and helped them type the sentences on each story page of the *Storybird* platform using the teacher’s account. Finally, after the participants completed the created storybook, the instructor guided the class to chorally read the story to verify the content of the story before publishing the digital storybook with the title of “Christmas Day” on *Storybird* (<http://storybird.com/books/christmas-1290/>).

2.5 Data Collection

Both quantitative and qualitative data were collected. From a quantitative perspective, according to the pretest and posttest scores, a repeated measure *t*-test was conducted to see if there was any significant growth in the participants’ vocabulary and reading comprehension after receiving the DST instruction. For writing skill development, the instructor set up a video camera in the back of the classroom to record the participants’ collaboration during the writing process within and among the groups. In addition, the processes of choosing the pictures by each group and writing on the *Storybird* platform were recorded by *Snagit*, a screen-capture software which allows users to grab the image or video of what they see on their computer screen. Finally, both audio and video recordings were collected to analyze the participants’ writing process and skill development. From the qualitative perspective, the audio recordings were transcribed and analyzed through protocol analysis to see the participants’ writing process and writing skill development.

3. Results and Discussion

To answer the first research question, Table 1 shows the means and standard deviations of the subjects’ performance in the pretest and the posttest. The pretest result showed that the participants scored an average of 71.30, whereas the posttest result revealed that they scored an average of 81.48.

Table 1: Results of the repeated measure on the vocabulary and reading comprehension scores.

	N	M	SD	F	P
Pretest	27	71.30	26.11	14.35	.001
Posttest	27	81.48	20.13		

Maximal score = 100

The result of a repeated measure *t*-test showed that the DST instruction using the two art-inspired digital stories significantly improved the participants' vocabulary performance and reading comprehension in the post-reading phase ($F(1, 26) = 14.35, p < .001$). In summary, the DST instruction was shown to have a positive effect on the participants' vocabulary learning and reading comprehension.

In addition, to answer the second research question, qualitative analysis of the audio/video recording revealed that the four groups took the storyline into consideration through discussion and interaction with their group members since they were found to discuss among the groups to verify if the image of each page was proper to continue the story. Second, when they started to create the sentences to describe the images, most of the groups likely recycled some keywords the instructor had taught them during the reading session. This provides strong support for the reading-to-writing connection model (Durukan, 2011; Giesen, 2001; Stevens, et al., 1987). Third, during the composing session, the content of page one was created completely in English, whereas the other story pages were produced partially in English and partially in Chinese. For example, initially Group 1 produced the content for page two as "The reindeer sends gifts". Through the teacher's provision of a useful prompt "The reindeer sends the gifts to *whom*", Group 1 students were able to modify the story content as "The reindeer sends the gifts to *everyone*". In producing the content for page five, Group 3 students said "三個天使sing for Christmas Day". Moreover, when composing the content for page six Group 3 students said "兩個baby把花圈放在Christmas tree". It appeared that the words *angel* and *wreath* are difficult for the students. However, with the help of the instructor, Group 3 could modify the content for page five as "Three angels are singing a song for Christmas Day". Finally, by providing some keywords such as *excited* which the students have known to help Group 4 to continue the storyline, it revealed that they made efforts to give feedback to make the story fluent. The following is the 8-page story content produced by the students as a whole class.

Today is Christmas Day (p1).

The reindeer sends the gifts to everyone (p2).

A boy/girl wants a panda for the Christmas gift (p3).

A girl gets many gifts (p4).

Three angels are singing a song for Christmas Day (p5).

The two little angels are putting the wreath on Christmas tree (p6).

I am not good, so I do not get the gift. I feel sad (p7).

The babies are good, and they are excited to get the gifts (p8).

In summary, out of the 72 tokens (42 different words) created by the students, 17 tokens (24%) were likely recycled from the reading session. Furthermore, the students were able to produce 9 different words/11 tokens (15%) by themselves such as *reindeer*, *everyone*, *girl* (x 2), *boy*, *panda*, *sing*, *good* (x 2), *sad*, and *baby*. It is likely that the students have acquired these vocabulary items prior to the experiment. It is also noticed that the combination of art and words inspired and motivated some of the reluctant readers and writers in the present study.

4. Conclusion

The DST technique implemented in the present study was found to have a positive effect on Taiwanese EFL sixth graders' vocabulary, reading comprehension and writing skill development. The reading improvement is both due to the teacher's elaboration of the two art-inspired digital stories and the interaction through the teacher-student question-and-answer interaction. For the writing skill development, the students were found to work collaboratively with their peers, seek help from the teacher, use their prior knowledge and provide feedback to help their peers create the storyline smoothly. Although the sample size in this study was small, the results of this preliminary study shed light on the possibility of integrating digital storytelling into elementary classrooms to facilitate EFL young learners' reading comprehension and writing skill development through teacher-student collaboration and student-student collaboration. For future studies, with familiarity with the digital story production process and the operation of the *Storybird* platform, it is suggested that each small group of students can be asked to produce an individual digital story. Follow-up studies can also compare the effectiveness between teacher-student collaboration and student-student collaboration.

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