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A digital storytelling game-based distance course for enhancing young learners' language and critical thinking skills in a foreign language

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Abstract

The present study aimed at exploring the effective use of digital storytelling in a game based, distance learning context. A digital storytelling tool (StoryLogicNet Community) was introduced for the promotion of foreign language (FL) learning and critical thinking skills among primary school students in Greece. More specifically, a sample of 21 fifth-graders participated in an online distance course, where no traditional classroom instruction was included. Learners were assigned into groups for accomplishing collaborative and game-based DS activities during a 4-week time period. Young learners' performance concerning their language and critical thinking skills was examined through qualitative and quantitative research instruments. The analysis of pre- and posttest, teacher's journals and participants' responses to interviews revealed that the DS distance course has significantly contributed to the development of their FL vocabulary and their communicative skills, also stimulating their critical thinking ability in a digital environment.

Keywords: digital storytelling, second/ foreign language, collaborative writing, language skills, critical thinking skills

Introduction

Nowadays, the rapid change in information and technology has led to changes in everyday life and education. Contemporary approaches are formed on teaching and learning (Grant & Bolin, 2016) to address the needs of children born into a media-dominated society, interacting with technology from early infancy. However, despite regular use of technology, young children do not possess digital competency as an inborn skill (Prensky, 2001). Digital Storytelling (DS) constitutes a useful tool to the acquisition of the 21st century skills. It refers to the combination of traditional, oral narration with multimedia and communication tools combining different types of multimedia material, including images, text, video clips, audio narration and music to tell a short story on a particular topic or theme (Bratitsis et al., 2014; Korosidou & Bratitsis, 2020). In other words, DS is about the art of telling stories in more than one language: verbal, visual, audio etc. (Center for Digital Storytelling, 2010; Yuksel, 2011). DS process allows young learners to acquire language skills, to develop their collaboration and problem solving skills, as well as to interact with digital media (Korosidou, Bratitsis & Griva, 2021). Drawing on the abovementioned, in the present study emphasis is placed on DS in order to provide young learners with a tool that will assist them in using technology critically. To that aim, children of a primary school were invited to participate in a distance course, inventing their digital stories by engaging in collaborative writing in a game-based context. Emphasis was placed on fostering their ability to become efficient storytellers, also developing a variety of other skills, including linguistic and

creative ones. Digital stories were actually a synthesis of illustrations and texts. The present work is structured as follows: first a brief introduction is made to the theoretical framework related to DS and multiliteracies development. The design and implementation of the pilot program, as well as its evaluation follow. Finally, the conclusions of the present research study are presented, while a connection with the results of related research is attempted.

Theoretical Framework

Multiliteracy (The New London Group, 1996; Cope and Kalantzis, 2000) refers to the ability to identify, interpret, create, and communicate meaning across a variety of visual and oral forms of communication, involving an awareness of the social, economic and wider cultural factors that frame communication. One of the fundamental goals of a pedagogy of Multiliteracies is to create the conditions for citizens capable of facing today's challenges, being able of critical understanding (Cope & Kalantzis, 2006) or of collaborating and negotiating with others who are different to themselves in order to forge a common interest (Cope & Kalantzis, 2015). In more detail, Multiliteracy Pedagogy aims to develop the 4Cs skills, namely communication, collaboration, co-creativity and critical thinking. It facilitates the development of students' individual and collaborative interests and abilities through the use of new digital media, allowing them to interact and collaborate by engaging in a process of knowledge construction with a broader community of peers, also developing their critical thinking. Students are given opportunities to learn in a flexible environment, to develop digital literacies and their communicative competence, as well as abilities to lead and work in teams. Values, attitudes and behaviors are also cultivated, through activities that encourage active participation and engagement in school and community environments (see Drew, 2013; Tan & McWilliam, 2009).

As far as DS is concerned, "the importance of having a story at heart of a digital story-with a beginning, an end and some development and interest between these points" (Boase, 2013, p.2) is highlighted in the literature. In that vein, the major components of a digital story (Center for Digital Storytelling, 2010) refer to a process to be followed towards effective DS. In more detail, participants in DS are encouraged to invent their stories by including the following seven components: a) a point of view, to assist them in showing their purpose and clarifying their perspective; b) a dramatic question, in order for the storytellers to arouse their audience's curiosity; c) the emotional content, for involving their audience in terms of their emotions; d) the gift of voice, to engage them in utilizing their voice to help their audience understand their story; c) The power of soundtrack, by encouraging storytellers to include music that supports their story; d) Economy, to make storytellers aware of the need to avoid excessive use of visuals/ and or audio; and e) Pacing, to encourage them to provide a rhythm to their stories.

Purpose and sample of the study

Taking into account the lack of relevant research activity in the Greek school context, the purpose of the present study was to introduce online teaching in the FL language learning environment through a game-based DS process. A total of 21 children (12 girls and 9 boys) attending a state primary school in a rural area in northern Greece participated in the intervention. The students were of Greek, Russian and Bulgarian origin. Participants were taught English as a foreign language (FL) by the teacher/ researcher for a long time before the intervention. The student distribution according to their language level was 4 students (19%) having a high language level, 9 students (43%) having a medium language level, 29

students (29%) having a low language level and 2 of them (9%) having a very low language level.

Design and implementation of the pilot program

Aim of the pilot program

The ultimate aim of the pilot implementation was to enrich learners' language, communication and critical thinking skills in the FL by following distance learning methods. Among the objectives of the pilot program were also the development of visual and technology literacy in the DS process, collaboration in an online game-based context and participation in a creative writing process.

Implementation of the pilot program

Twelve teaching sessions were spent on teaching English as a FL. Students were attending the sessions online in person, but were also working online at their own pace during their preferred periods of time. Planning and teaching online was the responsibility of the teacher, always done in advance, while emphasis was placed on focusing on students' needs and interests. Therefore, planning and teaching was an ongoing process which was coordinated and facilitated but not directed by the teacher, on the basis of the DS process. Special emphasis was placed on digital stories being conceptualized as products where diverse semiotic threads are interwoven, making them multimodal. It is worth mentioning that the students have worked on a DS project before and have experimented with non-virtual story cubes during the storytelling process. At the beginning of the distance course, participants were presented with the major components of a digital story (see Theoretical Framework). The process was adopted by the teacher as a method for supporting young learners in the invention of their stories. The online collaborative writing tool employed was *The Story Logic Net Community* (<http://www.storylogicnet.eu/>), which allows children to create their own stories with their friends and class mates. During the process, young learners were inspired by the use of digital story cubes. The digital story cubes were designed on the basis of Rory's story cubes (<https://www.storycubes.com/en/>). The teacher supported young learners' creative attitude by following certain practices, such as: a) organizing an extended time in the context of online teaching, in which children were provided with opportunities to think, write, create, illustrate and review their productions, and b) assigning learners into groups of 3, where each member adopted the role of the writer, the illustrator or the reviewer of the story, while relevant feedback on each role's responsibilities was provided by the DS tool introduced.

More specifically, a storyboard technique was adopted for converting an orally invented story in a digital, illustrated text (Petrucco & De Rossi, 2009). Learners engaged in a collaborative learning process and focused on language comprehension and production rather than memorization. The DS tool employed supported learners' reflective practice related to the creation of the story. Learners were encouraged to adopt an active role, mostly engaging with the language rather than using memory to comprehend a second/ foreign language. Educational digital games were also employed (tossing virtual story cubes to draw a sequence of images, which could inspire them in inventing a story in oral form, creating interactive flashcards containing information and pictures of digital heroes etc.), requiring students to interact with others and directly apply what they have learned rather than answering questions mechanically, as they might do in a typical classroom setting (Kit-Lam, 2011). Students were strongly encouraged to use their inspiration and creativity during

the games, by using software and applications to design their story heroes, to depict story scenes and create their symbols. Through this process students familiarized with multimodal texts and the use of all semiotic sources to make meaning in the target language.

Results

Both qualitative and quantitative data were gathered to assess the effect of the pilot intervention on young learners' language and critical thinking skills. The instruments used, following a data triangulation approach (Kember, 2003), were: a) pre/post testing, b) teacher's journals, and c) semi-structured interviews.

A. Pre-test and Post-test

The statistical package SPSS for Windows was used for the analysis of the data collected from the pre- and posttest. The pretest was distributed before the pilot implementation (end of November), while the posttest at the end of it (end of January). Pretest and posttest included writing a story in the traditional classroom. Each student wrote the story on his/her own before and after the pilot intervention. The analysis of the data collected from the pre- and posttest was made on the basis of the following four criteria. The researcher drew on the elements defining communication competence proposed by Canale and Swain (1980), thus the criteria included:

- 1) Grammatical Competence, focusing on how to use the grammar, syntax and vocabulary in the target language.
- 2) Discourse Competence, concerning cohesion and coherence in written discourse.
- 3) Strategic Competence, referring to the appropriate use of communicative strategies
- 4) Critical Framing, regarding the interpretation of a social and cultural context in which the story is produced.

The analysis of the data collected from the pre- and posttest was made by adopting a 1-5 assessment scale on the basis of the abovementioned criteria. The processing of the data led to the results presented in the following tables.

Table 1. Pre/ post test results

	N	Mean	Std. Deviation	Std. Error Mean
Pre	21	2,57	1,16	0,25
Post	21	3,67	1,06	0,23

Table 2. Pre/ post test results (Levene's test for Equality of Variances)

	F	Sig.	T	df	Sig.(2-tailed)	Mean Difference	Std. Error Diff.	95% Confidence Interval of the Difference	
								Lower	Upper
Equal Variances assumed	0.822	0.370	-3,180	40,000	-0,003	-1,095	0,344	-1,791	-0,399
Equal Variances not assumed			-3,180	39,680	-0,003	-1,095	0,344	-1,791	-0,399

The results presented in Tables 1, 2 indicate that there was a statistically significant difference ($p < 0.005$) in communication competence between pretest and posttest. The data suggest that the game-based DS distance course provided young learners with opportunities to improve their overall communicative competence.

B. Teacher-researcher journal

The teacher-researcher kept ten (12) journal records during the project. The journal was structured on the basis of the reflection questions to guide journal entries proposed by Richards & Lockhart (1996). The qualitative analysis of the researcher journal records led to the creation of four typologies, namely A) Teaching Process, B) Teacher's role, C) Student's Attitude, D) Overall assessment of the intervention, and several categories and subcategories under each typology, (Table 3)

Table 3. Analysis of journal data

Typologies	Categories	Subcategories	Frequency		
A) Teaching Process	<i>Goals</i>	i. multiliteracies development	12		
		ii. development of digital literacy	12		
		iii. development of communicative skills	12		
		iv. time management	6		
		v. brainstorming	6		
	<i>Methods and techniques employed</i>	vi. collaborative learning	10		
		vii. game-based learning	10		
		viii. digital material	10		
	<i>Teaching aids</i>	ix. ebooks	8		
		x. digital games	9		
	<i>Working online</i>	xi. pair work	4		
		xii. group work	8		
		xiii. working individually	3		
B) Teacher's Role	<i>Communication</i>	xiv. use of mother tongue (L1)	5		
		xv. use of FL	10		
	<i>Ways to provide students with help</i>	xvi. use of visual aids to convey meaning	8		
		xvii. encouragement	7		
		xviii. instructions for the digital activities	9		
		xix. reminding initial goals	9		
		xx. differentiated online activities (according to students' needs)	6		
		xxi. focus on creative writing	12		
		C) Student's Attitude	<i>Students' attitude toward the project</i>	xxii. learning as a pleasurable experience	10
				xiii. collaboration	9
xiv. active participation	8				
<i>Participation in the distance course</i>	xv. evaluation		9		
	xvi. development of soft skills		4		
	xxvii. digital games		10		

		xxviii. probing	4
		xxix. online presentations	6
D) Overall evaluation of the intervention	<i>Problems encountered during the project</i>	xxx. time management	8
		xxxi. familiarizing with digital tools	8
		xxxii. working on a digital environment	12
	<i>Learning Outcome</i>	xxxiii. writing skills development	9
		xxxiv. creating multimodal/multifunctional texts	10
		xxxv. technology literacy	9
		xxxvi. digital skills	7
		xxxvii. self-evaluation	5
		xxxviii. critical literacy	10
		xxxix. pleasure and enjoyment through creativity	9
	<i>Development of attitudes</i>	xl. cooperation	8
		xli. self confidence	6
		xlii. taking responsibility for learning	6
		xlii. positive attitude toward second/ foreign language	9
		xliii. positive attitude toward ICT	8
		xliv. multicultural awareness	7

C. Semi-structured interviews

At the end of the pilot intervention, semi-structured interviews (*"What did you like most about the project?"*, *"What difficulties did you face?"* etc.) with the students were conducted to record their attitudes towards the DS project. The qualitative analysis of the data gathered led to the formation of the following thematic axes: a) learning through collaboration, as children stated that: *"It is more fun working with others to write a story, I can help them and they can help me"*, *"I like working individually, but I think working in groups is great pleasure"*, b) utilization of digital tools and games, as children observed that *"I liked this DS tool so much, though I would like not to be restricted by the software to a certain text length"*, *"this tool was great because I could see what my classmates wrote and then I felt that it was my turn to put my imagination in to that digital page"*, *"the story cubes, the heroes we created on the (digital) cards, the colors I could use to illustrate our story inspired me to write and I felt I was given a lot of opportunities to create things the way they were on my mind"*, *"...the Story Logic Net can help me draw instead of write, I can draw something relevant to the text and then my classmates can see what I drew and be inspired to write the next page"*, and c) empathy maps as steps to effective storytelling, as children recognized that *"the maps are very helpful... I put the hero on the center and then I think about him and ideas come to my mind, I take them down and then I think about this hero I want to create"*, *"the map helped me stay focused on the story, it was easier for me to write my story"* or *"I think the map is something I can use every time I write a story, even when I use my pencil and paper... I did not feel I was lost, I could look at my map and find all the words I needed"*.

Conclusions

It was concluded that the creation of a distance course on the basis of a DS learning framework had a strong effect on FL learning. The results of the pre- and posttest, the teacher's journal analysis and the data gathered from the interviews with the participants showed that young children's language and critical thinking skills were enhanced, facilitating them to communicate and express themselves in a multimodal learning environment. The process stimulated the development of key competences like creativity, communication, teamwork and foreign language. By using the Story Logic Net Community tool, all learners were provided with opportunities to contribute their ideas to storytelling planning, to interact during the writing process and include elements relevant to their origin/ culture, to seek for inspiration, to edit and review the stories before presenting them to peers. Through online collaborative the multiliteracy pedagogy was implemented, while young learners expressed themselves in multimodal ways and their stories had a wider impact on their school community, as they shared and discussed them with peers. The texts they produced were multifunctional, as text and illustrations were combined in critical way in order to convey meaning. Technology literacy and digital literacy were also enhanced, as young learners kept familiarizing with digital media and the multimodal means of expression all through the DS process. On the part of the teacher, the learning environment created was dynamic, integrating all four language skills during teaching and engaging in effective literacy instruction.

The findings of the study align with that of previous research, documenting that it is not technological devices and applications alone but also the interrelationship and interaction with multimodal semiotic resources that may affect the learning environment and have an impact on classroom communication (Jewitt, 2006). As observed in previous studies (see Lambropoulos & Bratitsis, 2019), multimodal DS expression of thoughts, ideas and opinions was found to enable children to become more active and productive in collaborative communication activities, also supporting their critical thinking and creativity. The concept of a digital story in the specific study carried implications for an expanded view of the concepts of literacy and communicative competence, during both the design and the implementation of the distance course, referring to any form of verbal or non-verbal communication or practice that requires a form of language code. The ways these semiotic modes interacted with verbal or written language in producing meanings were discussed with students during the online course. Students were encouraged to explore how the context of the digital story goes beyond what is said and written, including 'other non-verbal goings - on - the total environment in which a text unfolds' (Halliday & Hasan, 1989, p.4). The limitations of the study include the diverse student population, in terms of some of the students being multilingual, therefore learning English as a second FL, as well as the small sample size. However, this pilot study's positive implications on young learners' language and critical thinking skills suggest that collaborative writing through a DS process can be explored to a greater extent in the future, in order to reach further conclusions.

Conclusions

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