Promoting inclusiveness, creativity and critical thinking through digital storytelling among EFL teacher candidates.

Jose Belda-Medina

Department of English Studies, University of Alicante

Alicante, Spain

Jose Belda-Medina is an Associate Professor of Applied Linguistics at University of Alicante, Spain. He has taught several courses on Educational technology at different universities in Spain, UK, USA, Germany and the Czech Republic. His research interests include ICTs, education, critical thinking, inclusiveness and creativity.

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Storytelling is an essential component in language learning and acquisition but it has changed over time from early oral tradition to modern digital literacy. Although digital storytelling (DST) has become an important tool in language development inclusive and diverse stories are still underrepresented. The novelty of this article is that it reports the findings of a two-year research about the design and use of DST by 244 teacher candidates and their attitudes toward inclusiveness and diversity in Education. Quantitative and qualitative data was gathered through a pretest/post-test, class presentations and semi-structured debates. The results revealed statistically significant differences after the treatment as regards inclusiveness and diversity among participants, who demonstrated their creativity and openness to transformative technology pedagogy, and unveiled the early presence of stereotypes among children. The teacher candidates widely supported the integration of inclusive DSTs in the English as a Foreign Language (EFL) classroom but advocated for a better pedagogical and technological preparation in their transition from digital native students to digital native teachers.

Keywords: digital storytelling; inclusiveness; creativity; critical thinking; English as a Foreign Language (EFL).

Introduction

Storytelling is an essential component in child development and language acquisition since children learn about the world through tales and stories told and read by relatives, teachers and other community members. Traditionally, books were and still are a vital means of communication for children since they help them to develop their oral and reading skills. However, telling stories has considerably changed in form, structure, purpose, audience and means across history, as illustrated in different publications which analysed the evolution of this genre from early oral tradition to modern digital

literacy (Madej, 2003; Lugmayr et al. 2017). In the last century, several popular stories were adapted into cartoons and movies by a few international companies, thus shaping children's imagination and understanding of the world but the emergence of new technologies in the last decades has changed the audiovisual scenario and a growing number of animation studios are creating new stories. Children today are exposed to new visual types of communication from an early stage, particularly through web-based programs and applications such as digital videos, songs and stories.

Digital storytelling (DST) became a popular form of audiovisual narration first in the US in the 1990s, when the Center for Digital Storytelling, nowadays StoryCenter, was established in Berkeley in 1994, and a decade later in Europe and other parts of the world (Hartley & McWilliam, 2009). Several definitions of DST have come out to light but they all essentially refer to the same idea. Robin (2016) described it as 'the art of telling stories with a variety of digital multimedia, such as images, audio, and video […], they revolve around a chosen theme and often contain a particular viewpoint' (p. 18). Lambert & Hessler (2018) summarised seven elements to be included in the DST design, such as a dramatic question, emotion content, personal point of view, narrator's clarity of voice, economy, soundtrack and pacing. DSTs average from two to ten minutes in length (Sadik 2008; Ohler, 2013), and are created in a digital format which is often uploaded and shared on the web as a video file. Although a significant number of DSTs were originally devised to convey a personal story, this tool has been lately adopted for other purposes, for example marketing (Pera & Viglia, 2016), business (Takeda, 2018), healthcare (Moreau et al., 2018), and education (Yuksel-Arslan et al, 2016).

Critical thinking and creativity are two essential factors to consider in the educational use of DST. In this sense, Yang and Wu (2012) explored the impact of DST

on academic achievement of senior high school students learning English as a foreign language, pinpointing some benefits in the recognition of assumptions, induction, deduction, interpretation and evaluation of arguments. Similarly, Niemi & Multisilta (2015) focused on content creativity in the form of DST by students in three different countries, while Ribeiro (2016) explored the development of communicative skills and intercultural awareness in higher education.

DST has often adopted the form of a first-person narration for self-reflection, and sometimes advocacy, but there is a knowledge gap regarding the use of DST in foreign language learning, particularly in teacher training programs. Therefore, this experiment was aimed at creating digital stories intended for young English learners. The novelty of this article is that it analyses the effectiveness of using DST as a cooperative learning tool among teacher candidates to promote critical thinking, creativity and inclusiveness in the EFL classroom.

DST as an inclusive educational tool

DST in Education and Teacher Training Programs

There is a rich body of literature about the educational use of DST, particularly from a constructivist approach (Wu & Chen, 2020), since it has been used to engage students in their learning progress as an expression of their own identity (Kortegast & Davis, 2018), be it in the mainstream classroom (Tur et al. 2017) or in some specific area related with different minorities (Anderson & Mack, 2019). Creativity has been the object of study in most cases, for example Schmoelz (2018) examined student interaction in classroom activities that adopted DST to enable co-creativity, highlighting its positive impact on factors such as engagement, control, shared enjoyment and fun.

A specific area within this genre is the use of DST in teacher training programs. In an empirical study, Heo (2009) explored pre-service teachers' self-efficacy and disposition towards this tool, emphasising the students' openness to change towards educational technology as well as the need to be trained in transferring their digital skills into the learning environment. Similarly, Shelton et al. (2017) reported the results of exploiting this tool with pre-service teachers in relation to student motivation and empowerment, while Walters & von Guillern (2018) investigated how DST supports critical digital literacy among Education students.

DST has also been adopted in some academic programs as a pedagogical tool to train teacher candidates in diversity awareness, particularly in multi-ethnic, multicultural and multilingual contexts. For example, Chigona (2015) examined the influence of using it on pre-service teachers' perceptions in a South-African diverse classroom and DuBois (2018) studied its effectiveness to help Education students re-examine their beliefs about social norms and to develop cultural awareness.

DST for inclusiveness and diversity

Given the potential for self-reflection and advocacy, DST has been implemented as a method to instruct and fight against stereotyping and discrimination for different reasons, such as gender, race, culture, religion, nationality or sexual orientation, the main goal being to promote empathy and respect towards the others. Thus, Rubegni et al. (2019) inquired into gender stereotypes detected in multimedia stories created by children and analysed their gender-normative behaviour while Bratsitis & Ziannas (2015) delved into social empathy fostering in early childhood through the adoption of DST among pre-schoolers.

Generally, raising awareness on diversity has been the main objective, for example Matias & Grosland (2016) used DST to challenge whiteness and promote a critical self-revelation among white teacher candidates, and Alcantud (2016) exploited DST to raise social awareness on refugees among ESL pre-service teachers. In fact, this tool has become a responsive method to tackle bullying, thus Cordi & Masturzo (2013) investigated its effectiveness to address aggressive behaviour among school children.

However, there are other areas where research on DST is comparatively scarce and remains unexplored to date, for example the issues of gender and sexual identity in education, apart from a few examples such as Vivienne (2011), who used trans digital stories to challenge common notions of gender identity as a reflection on non-binary people, and Arraiz et al. (2020), who discussed the use of DST among female teachers as an expression of their own sexual identity.

One particular field which has been the object of study is Special Education Needs (SEN). This is a broad area covering people with physical and developmental disabilities, psychological, emotional, behavioural and mental disorders. In this respect, Botturi et al. (2010) looked into stories through DST as a learning experience to promote the integration of SEN children, Price-Dennis et al. (2015) provided an insight in digital literacy practices illustrated though different samples, and more recently, Flórez-Aristizábal et al. (2019) examined the implementation of DST as a collaborative strategy to support literacy teaching for deaf or hard of hearing children.

DST in the English as a Foreign Language (EFL) classroom

Recent advances in DST creation tools such as the emergence of free or low-cost web-

based programs and multiplatform apps with enhanced sound and video technologies have significantly contributed to its expansion in language learning. Oskoz & Elola (2016: 157) provided an overview of how DST has been used in L2 contexts, stressing the importance of the 'shift from a traditional literacy concept to a new concept of multi-literacies'. Similarly, Moradi & Chen (2019) remarked that the students' cognitive development can be fostered through DST, as they get engaged in their own learning process by creating real-life situations.

DST has been used in second and foreign language education settings with different learning objectives, for example Kim (2014) inspected how it can be employed to improve oral proficiency in an autonomous learning environment, Leong et al. (2019) noted that it is a suitable and appropriate method for vocabulary learning in an elementary school, and Yang et al. (2020) studied its effectiveness on EFL learners' speaking skills. A good amount of research has also focused on analysing the impact of DST on student attitudes and motivation, thus Pappamihiel et al. (2017) examined the beliefs and attitudes of pre-service teachers regarding dominant language learners through digital stories and Hava (2019) explored the effects of using DST on three domains related with the level of self-confidence, personal use and attitudes among teacher candidates.

However, there is little research on the transformative use of DST in teacher training programs to promote creativity and inclusiveness in the EFL classroom so this article aims to bridge this gap between DST integration and teacher preparation. Although several authors have stressed the importance of appropriate teacher training as regards technology pedagogy, this is a remaining issue in most educational programs where technology 'is applied simply to replacement or amplification uses' (Yang & Wu, 2012, p.342). In this regard, proper training can help students to take a leading role in

creating their own digital materials, which can be adapted to their educational needs and expectations. For this purpose, research participants were instructed to develop inclusive DSTs in small teams. This experiment aimed to investigate the following three research questions:

1. Do teacher candidates have the digital skills to create collaboratively DSTs in English?

2. Do teacher candidates have the critical thinking skills to integrate their DSTs from an inclusive perspective?

3. Will there be any difference in the participants' attitudes towards inclusiveness and diversity before and after the experiment?

The independent variable was the use of DST in the EFL classroom and the three dependent variables were students' creative skills, critical thinking skills and attitudes towards inclusiveness and diversity.

Method

Context

This research took place at the University of XX, a medium-sized university located in an urban area on the South-eastern coast of XX. The participants were 244 undergraduate students enrolled in the subject named XX, which was taught during the third year of the degree in Early Childhood and Elementary Education. Classes ran daily from Mondays through Fridays in two-hour sessions during the first two months of the term (September and October) and the experiment took place during two consecutive academic years (2018-19 and 2019-20) with different students. There were three different groups per year (two groups in the morning and one in the afternoon) with an average of 40 students per group. The class methodology was based on Project-based

Learning (PBL) and collaborative learning so the participants were required to create different teams of 4-5 members for their ICT-based projects. There were approximately 7-8 teams per group in each of the 3 groups per year, totalling 244 students in a two-year time. Although students were required to have a B1 level of English (according to the Common European Framework of Reference- CEFR) an English placement test was administered the first week of class, revealing some language differences since some students had a lower level while others were English native speakers residing in the area. In regard to gender and age distribution, 86% were female students and 94.5% were 20-29 years old.

Instruments

A quasi-experiment design including two types of instruments was used to gather quantitative and qualitative data. An on-line pretest/post-test was administered during the first and last week of class. The pretest consisted of three different sections: the first one focused on socio-demographic data; the second contained 10 items to determine students' previous experience on DST and their awareness of inclusiveness when reading children's stories; and the third section was aimed at measuring students' attitudes towards inclusiveness and diversity by combining 25 items from three different scales used in previous research (Forlin et al., 2011; Hachfeld et al., 2011; Averett & Hegde, 2012). The post-test replicated the last section of the pretest, and a new section was added requiring participants to rate their DST experience.

Qualitative data was obtained by means of three different instruments: firstly, the DSTs created by students, following the instructions provided in the classroom; secondly, oral presentations in the class; thirdly, a semi-structured debate, in which all students discussed different aspects associated with the DSTs. These oral presentations

and debates proved to be truly enriching as students exchanged their beliefs and provided personal experiences, leading on some occasions to personal disclosure and empowerment. In the afternoon classes, some eight-year-old children with their parents were invited to the DST screening, thus providing their insights about the stories.
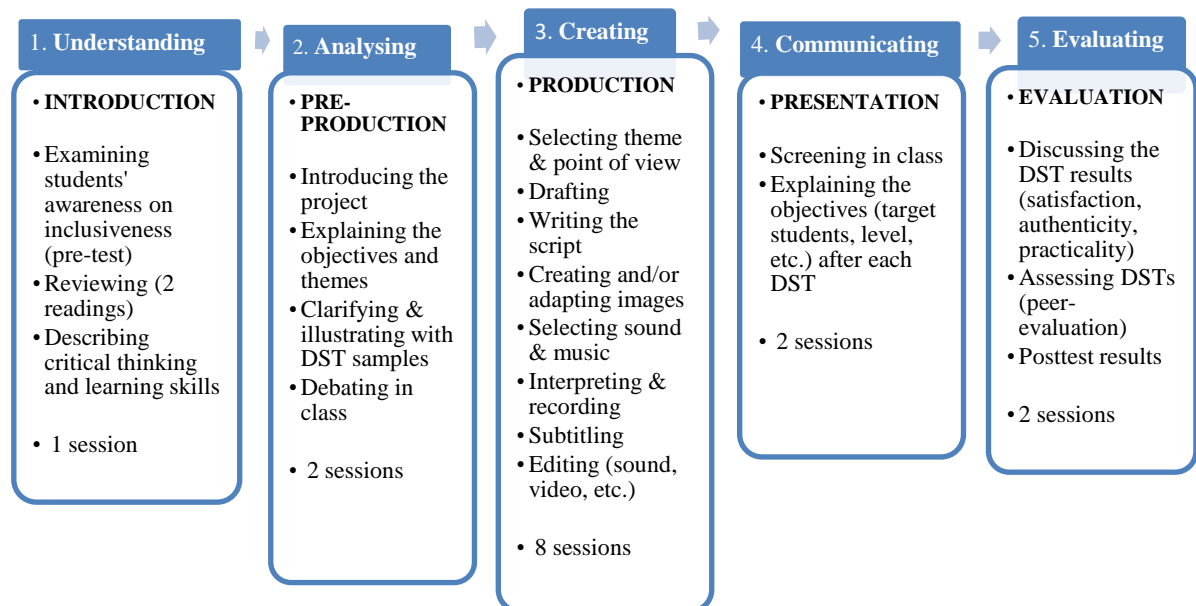
Procedure

The class methodology was based on Project-based learning (PBL), so the teacher candidates were randomly grouped into small teams of 5-6 members and received instructions on the DST design, they had to negotiate several aspects connected with the project such as the story, the point of view, the characters, the music, the vocabulary or the digital tool. The handbook contained detailed instructions to guide participants through the different stages, such as learning objectives, keywords, recommended tools and a rubric, as shown in Figure 1.

Figure 1. DST instructions provided to the teacher candidates.

Objectives	Keywords	Design	Themes	Rubric
Review stories and tales from a critical standpoint	Digital Storytelling (DST)	Length: 3' min. 5' max. (script: 2 pages max)	Physical disability (mobility , visual impairment, hearing loss, etc.)	2 points: story, originality & inclusiveness
Create a DST from an inclusive and diverse perspective	Inclusiveness and diversity	Make it inclusive and diverse	Developmental, genetic & mental disorders (Autism, Down Syndrome, Bipolar disorder, etc.)	3 points: design & visual elements
Present and explain your DST in class	Prejudice, bias, discrimination, bulllying, hatred	DST in English adapted to your target students and level (Pre-School, Elementary school children)		2 points: narration & characters (pronunciation & interpreting)
Work collaboratively and discuss with your partners about inclusiveness and diversity in the EFL clasroom	Awareness, respect, empathy, understanding, tolerance	Elements: voices of narrator & characters, onomatopoeic sounds, soundtrack, subtitling, audio description, etc.	Ethnic and cultural diversity (nationality, race, religion, etc.)	3 points: class presentation & discussion (peer evaluation)
			Affective diversity	

The participants were free to select the point of view and theme/s of their stories and were technically instructed about different digital tools (Storyjumper, Storybird, ZooBurst, LittleBirdTales, Utellstory, Powtoon, etc.). Collaborative work was essential since they had to create their stories in a three-week period or fifteen two-hour sessions. According to Moradi & Chen (2019), the DST creation process comprises six different stages, such as determining the point to be made, searching for information, storyboarding, editing and revising the script, construction of digital movies and screening on the web. This experiment was more comprehensive as it was not exclusively based on the DST creation process, it also included pre-production and evaluation so the Moradi and Chen's stages were included in stages three and four. In total, there were five stages, each associated with different critical thinking skills as illustrated in Figure 2.

Figure 2: Critical thinking skills and stages of the DST experiment

1. **Understanding**	2. **Analysing**	3. **Creating**	4. **Communicating**	5. **Evaluating**
• **INTRODUCTION** • Examining students' awareness on inclusiveness (pre-test) • Reviewing (2 readings) • Describing critical thinking and learning skills • 1 session	• **PRE-PRODUCTION** • Introducing the project • Explaining the objectives and themes • Clarifying & illustrating with DST samples • Debating in class • 2 sessions	• **PRODUCTION** • Selecting theme & point of view • Drafting • Writing the script • Creating and/or adapting images • Selecting sound & music • Interpreting & recording • Subtitling • Editing (sound, video, etc.) • 8 sessions	• **PRESENTATION** • Screening in class • Explaining the objectives (target students, level, etc.) after each DST • 2 sessions	• **EVALUATION** • Discussing the DST results (satisfaction, authenticity, practicality) • Assessing DSTs (peer-evaluation) • Posttest results • 2 sessions

In the first two stages, students were pre-tested regarding their prior attitudes toward inclusiveness and diversity and required to review and discuss two articles on

gender and race constructions (Chou, 2007) and equitable and inclusive education (Souto-Manning et al., 2019). Then, they were provided with an overview of the experiment and analysed the pre-test results. In the third stage, which was the longest, the team members negotiated their stories (topic, point of view, characters, setting, etc.) and prepared the script (maximum 2 pages). Then, they selected an authoring tool for their DST. Although they received a practical session on DST basic elements (narrator, characters, images, sounds, music, etc.) and authoring tools available (*Storyjumper, Storytell, Powtoon,* etc.) the teacher candidates required language assistance and technical support from the instructors. After developing their DSTs in the third stage, the participants shared their stories with the rest of the teams and briefly explained the point of view, theme, target students and learning objectives in each case. In the last stage, all the participants discussed the different DSTs and evaluated them through clickers, then they completed the post-test about their learning perception and attitudes toward inclusiveness and diversity (replicated). The last session focused on the evaluation of project results, including the data obtained in the pre-post-test.

Results and discussion

The results of the pretest revealed that most teacher candidates had previously taken SEN classes and that 42% of the participants had already created a DST, but only 14% of them had done it in English (EFL). According to the results of the second section aimed at measuring participants' self-perceived awareness on inclusiveness and diversity, three out of four of the respondents believed they were quite aware of inclusiveness when reading or watching children's stories and they stressed the

importance of creating stories from an inclusive and diverse perspective, as shown in Table 1.

Table 1. Participants' awareness of inclusiveness and diversity. From 1 (completely disagree) to 5 (completely agree)

Statement (n = 244)	1	2	3	4	5	Mean	SD
#1. When I am reading or watching children's stories or tales I am aware of inclusiveness and diversity	0%	2.1%	24.3%	47.3%	26.3%	3.98	.769
#2. I believe it is important to create stories and tales from an inclusive and diverse perspective	0.4%	1.2%	2.7%	11.2%	84.5%	4.81	.513

As regards previous knowledge of inclusive and diverse stories, the results illustrated in Table 2 evidenced that ethnic and/or cultural diversity was the only category with positive scores, thus revealing the difficulty to name some titles including characters with developmental, genetic or mental disorders.

Table 2. Participants' previous knowledge of inclusive and diverse stories

Theme / characters (n = 244)	YES	NO	Not sure
Physical disability (mobility, visual, hearing impairment, etc.)	35.2%	47.6%	17.2%
Developmental and genetic disorder (Autism, Down, ADHD, etc.)	22.3%	68.2%	9.5%
Mental disorder (Bipolar disorder, Schizophrenia, Anxiety, etc.)	27.2%	56.3%	16.5%
Ethnic and/or cultural diversity (race, nationality, religion, etc.)	58.6%	26.2%	15.2%
Affective diversity	15.7%	68.1%	16.2%

A total of 46 DSTs on different themes were created by the teacher candidates, ethnic and cultural diversity became the preferred theme (24%), followed by stories

related with physical disabilities (21%), including characters with some visual, hearing or mobility impairment. In the third place, affective diversity (18%) was illustrated by DSTs about same-sex couples and same-sex parenting, closely followed by stories associated with developmental and genetic disorders (14%), and finally DSTs about mental disorders (9%). A few teams decided to combine different topics, particularly physical disability and cultural diversity (14%).

Table 3. Selection of DSTs created by participants

Theme(s)	Title	Story
Physical disability (mobility, visual, hearing impairment, etc.)	1. Alika going to school	A blind girl living in Africa who wants to go to school against her father's will and needs to overcome several challenges.
	2. The virtue of being different	The story of two kids, Peter with a hearing impairment and Sarah who is on a wheelchair, and their school adventures.
Developmental and genetic disorder (Autism, Down Syndrome, etc.)	3. Louis, the machine driver	The story of Louis, a child with Autism, who plays with his imaginary friends.
	4. Alex and her friends	Alex is a girl with Asperger's whose partners do not understand why she acts differently.
Mental disorder (Anxiety, ADHD, Bipolar, etc.)	5. A new member of the crew	The story of a boy who has extreme fear about water but finally joins a ship to travel to a treasure island.
	6. The sad snail	A snail who feels lonely because someone broke his shell but some friends build a new home for him.
Ethnic and/or cultural diversity (race, nationality, religion,	7. Fatima's story	The story of Fatima and her Syrian family fleeing war and seeking asylum in Europe.
	8. Lisa's new life	A five-year-old girl who moves to another country and

etc.)		gets bullied at school because of the differences with her new partners.
Affective diversity	*9. How I met my father*	A baby seagull is abandoned by his family and adopted by two male penguins.
	10. Noah, an unusual boy	A boy who feels different because he likes to do girlish things and has problems with his partners at school.
Several themes combined	*11. Annie's story*	Annie is a girl who lives with two dads and falls seriously ill, so she is taken to the hospital and a guardian angel looks after her.
	12. Don Quixota and Sancha Panza	Don Quixota is a female knight who rides the roads with her female friend Sancha Panza, a blind squire.

Although the participants were technologically instructed in the early stages, several issues needed to be readdressed during the creative process. Firstly, they had to select the tool that best fitted their needs, taking into account different aspects such as platform, graphic design, pricing or publishing options, and they had to adapt or create their own images. Combining free templates with self-created characters was the most popular option, after realising the difficulty to find inclusive images on the web, which eventually led to a class debate about the underrepresentation of such stories. Furthermore, DSTs needed to include speech balloons, subtitles or an audio description to facilitate listening comprehension, and some teams also decided to incorporate sign language, as shown in Figure 3. Performing in English (EFL) was a major challenge for the participants, since they were required to act out the stories while using their own voices. The last technical problem was related with poor sound quality, so it was necessary to use some audio editing software.

Figure 3. Screenshots of DSTs created by teacher candidates
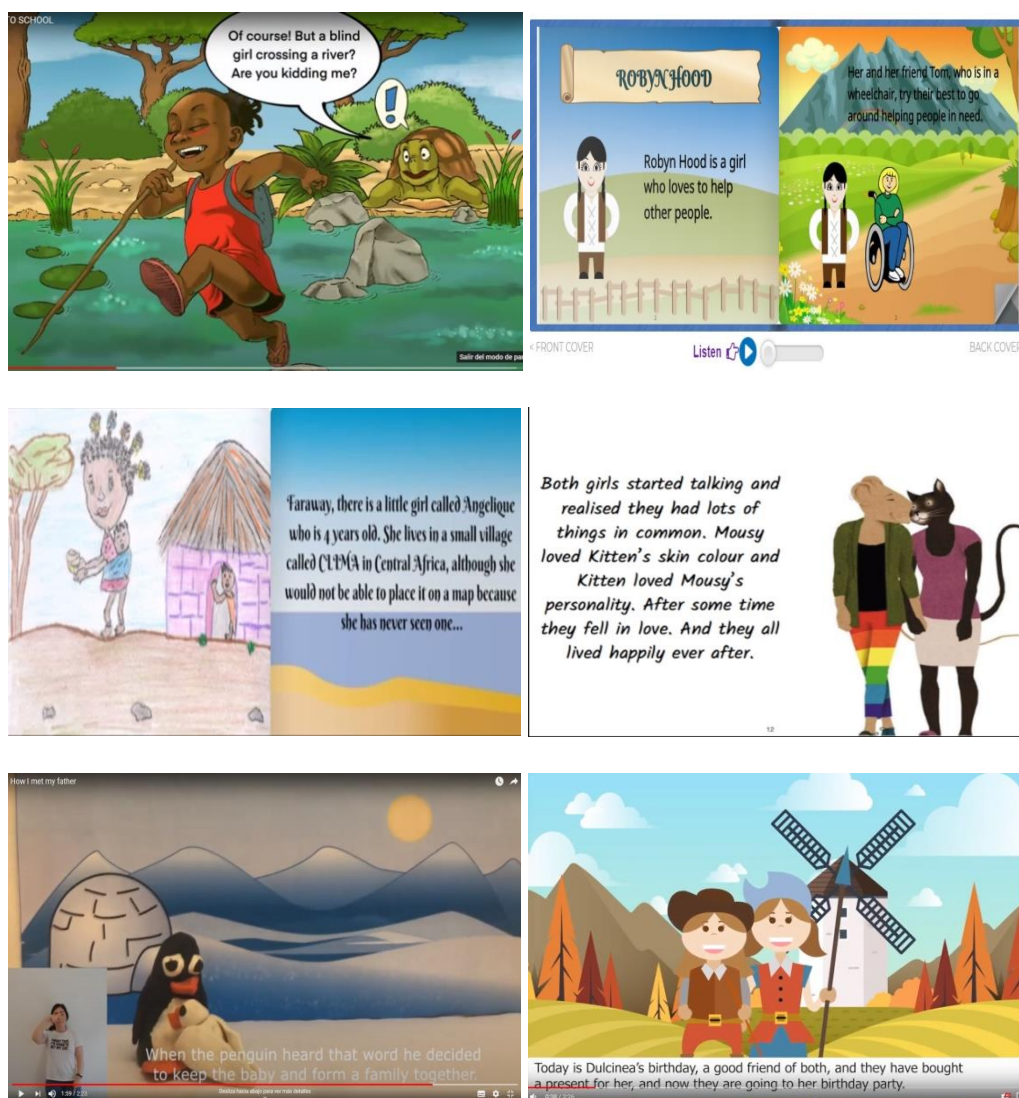
In the last stages, all the DSTs were screened and explained in the classroom, then the participants discussed some technical and pedagogical aspects associated with the stories. Moreover, several eight-year-old children accompanied by their parents joined the afternoon sessions, watched the DSTs and participated in the class debate. Although children had different levels of English most teacher candidates prepared different materials to ensure they could understand the stories through games, for example puppets and paintings. Most parents attending the sessions praised the stories and asked about some technological issues such as the availability of the authoring tools used to develop the DSTs, the total time required to create the projects and the technical

constraints experienced in the development process. Children reacted in very different ways, some of them expressing their enthusiasm while others feeling confused, particularly with new versions of traditional tales, thus revealing the early presence of gender and cultural stereotypes such as in *The three little pigs*. In this tale, the research participants recreated the traditional story featuring three female piglets, each with a different cultural background, a special need and a traditionally male occupation (a plumber, a carpenter and a farmer). After watching the DST, some of the children looked puzzled when the five female teacher candidates tried to explain with the aid of some puppets they had previously created the meaning of the new version. An eight-year old boy expressed his dissatisfaction with the new version of the tale as he insisted it was a fake because in the original story they were male pigs and did not have those jobs. In an attempt to explain the meaning of the new version, the team members asked first the child about his father's occupation, who was an electrician, and later about his mother's, who was in the classroom. When the child outspokenly replied his mother did not work because she stayed home all day the mother bitterly complained for such a comment, eventually leading to a debate about early gender stereotypes and cultural differences among children.

Concerning the DST creative process, the teacher candidates found technical aspects (items 5-8) more challenging, particularly using a digital tool and adapting or creating images, while nearly half of the participants believed making the story inclusive was easy, as shown in Table 4. Acting out the stories in English proved to be harder than expected, as some participants just read the script out.

Table 4. Level of difficulty of different tasks involved in the DST creative process. From 1=very easy to 5=very difficult

Items (n = 244)	1	2	3	4	5	Mean	SD
#1. Designing the whole story.							
	1.3%	21.7%	45.3%	30.2%	1.5%	2.86	.770
#2. Writing the script in English.	1.7%	26.3%	42.1%	26.2%	3.7%	2.98	.793
#3. Making it inclusive and diverse.	4.6%	43.3%	39.2%	12.6%	0.3%	2.67	.791
#4. Performing the story in English.	6.6%	27.3%	38.8%	22.4%	4.9%	2.89	.964
#5. Selecting and using a DST tool.	0%	11.2%	23.2%	44.2%	21.4%	3.75	.907
#6. Graphic design (templates, background, subtitling, speech balloons, etc.).	0.8%	16.2%	31.1%	40.5%	11.4%	3.39	.822
#7. Finding, adapting or creating the images of different characters.	0.3%	12.2%	27.1%	42.1%	18.3%	3.43	.934
#8. Audio recording and editing (voices, music, sounds).	0.9%	15.3%	29.1%	41.3%	13.4%	3.49	.941

The last section of the pre/post-test was aimed at measuring the participants' attitudes towards inclusiveness and diversity and it consisted of three subscales based on previous research (Cronbach's $\alpha = 0.775$). The Wilcoxon signed-ranked test for non-parametric data was used to compare the two related samples and to assess whether there was any statistical difference in the scores after the DST experiment. In the first section about Special Needs, with 12 items partly adapted from Forlin et al. (2011), the results revealed statistically significant differences ($p \leq .05$) in items #5 (p=.008), #10 (p=.001) and #11 (p=.033). Thus, teacher candidates were more open at the end to accept children with language or communication disorders in regular classes and less worried about students with disabilities not being accepted by their peers but the concern about their workload as future teachers increased.

Table 5. Attitudes towards inclusiveness and diversity: (1) Special Needs.

12 Items (n = 244)	Pretest Mean	SD	Posttest Mean	SD	Wilcoxon Test Z	Asymp. Sig. (2-tailed)
#1. I find it difficult to overcome my initial shock when meeting people with severe physical disabilities	2.16	1.002	2.15	.931	-.100	.921
#2. I am afraid to look at a person with a disability straight in the face	1.70	.944	1.83	.969	-1.433	.152
#3. I would feel terrible if I had a disability	2.68	1.083	2.66	1.063	-.139	.889
#4. I dread the thought that I could eventually end up with a disability	2.69	1.092	2.73	1.059	-.485	.628
#5. Students who have difficulty expressing their thoughts verbally should be in regular classes	3.59	1.259	3.86	1.057	-2.659	.008
#6. Students who frequently fail exams should be in regular class	3.62	1.185	3.75	1.096	-1.273	.203
#7. Students who need an individualized academic program should be in regular classes	3.63	1.142	3.78	1.111	-1.287	.198
#8. Students who are inattentive should be in regular classes	3.67	1.141	3.71	1.119	-.227	.821
#9. Students who require communicative technologies (for example Braille and sign language) should be in regular classes	3.70	1.134	3.69	1.130	-192	.848
#10. I am concerned that my workload will increase if I have students with disabilities in my class	2.64	1.349	3.04	1.245	-3.347	.001
#11. I am concerned that students with disabilities will not be accepted by the rest of the class	3.40	1.268	3.20	1.222	-2.138	.033
#12. I am concerned that I do not have knowledge and skills required to teach students with disabilities	3.39	1.112	3.25	1.091	-1.821	.069

As regards the cultural diversity section, partly based on Hachfeld et al. (2011), the findings revealed that the teacher candidates already had a positive attitude towards

cultural differences in the classroom before the experiment so the pre-post-test differences were very small as shown in table 6. However, statistically significant differences were observed in the items #14 (p=.022), #16 (p=.040), #18 (p=.003) and #19 (p=.047) based on the results of the Wilcoxon signed-rank test. Therefore, the participants gave more importance to teaching tolerance and respect towards those who are/feel different after the experiment and they believed educators should enhance children's common values, particularly when conflicts arise. They also believed teacher training programs should include how to deal with cultural diversity in the classroom.

Table 6. Attitudes towards inclusiveness and diversity: (2) Cultural diversity.

8 Items (n = 244)	Pretest Mean	SD	Posttest Mean	SD	Wilcoxon Test Z	Asymp. Sig (2-tailed)
#13. In the classroom, it is important to be responsive to differences between cultures	4.41	.809	4.54	.693	-1.667	.095
#14. It is important for children to learn that people from other cultures can have different values	4.50	.751	4.63	.625	-2.288	.022
#15. Respecting other cultures is something that children should learn as early as possible	4.64	.630	4.70	.572	-.944	.345
#16. Dealing with cultural diversity should be taught in teacher training courses	4.27	.853	4.43	.708	-2.054	.040
#17. Schools should aim to foster and support the similarities between students from different cultural backgrounds	4.35	.763	4.47	.717	-1.742	.081
#18. In the classroom, it is important that students of different origins recognize the similarities that exist among themselves	4.28	.779	4.48	.693	-2.961	.003
#19. When there are conflicts between students of different origins, they should be encouraged to resolve the argument by finding common ground	4.32	.782	4.46	.716	-1.987	.047

#20. Children should learn that people of different	4.43	.667	4.53	.657	-1.716	.086
cultural origins often have a lot in common						

The results of the third section on affective diversity, partly adapted from Averett & Hegde (2012), evidenced significant differences in items #22 (p=.001), #23 (p=.010) and #24 (p=.001) after the experiment. Thus, the participants believed teacher candidates should be trained in different family models, and they rejected the ideas that children from same-sex parents lack a role model of one gender or suffer from low self-esteem as illustrated in table 7.

Table 7. Attitudes towards inclusiveness and diversity: (3) Affective diversity.

5 Items (n = 244) Cronbach's α = 0.775	Pretest Mean	SD	Posttest Mean	SD	Wilcoxon Test Z	Asymp. Sig (2-tailed)
#21. I believe gays and lesbians can be good parents and a positive role model for their children	4.70	.614	4.61	.697	-1.396	.163
#22. I believe children raised by same sex parents lack a role model of one gender	2.48	1.436	2.07	1.232	-3.348	.001
#23. I believe children from same-sex parents are more likely to be homosexual or lesbians themselves	1.95	1.178	1.72	1.025	-2.576	.010
#24. I believe children from same-sex parents suffer from low self-esteem	1.97	1.177	1.67	.938	-3.437	.001
#25. I believe teachers should be trained in different family models	4.20	1.060	4.27	.968	-.712	.476

Finally, the post-test contained three items requiring teacher candidates to rate their satisfaction with the DST experiment. In the first question, they were asked how much their ideas about inclusiveness and diversity had changed, 39.1% of them selected choice number 4 (quite) and 28.3% chose number 3 (moderately) (M = 3.52). In the last

two questions about the participants' willingness to use DST in their future professional careers, 75.5% (M = 4.28) of the respondents stated they would like to integrate DST in the EFL classroom and 82.8% (M = 4.25) indicated they would enjoy using their own digital stories as future English teachers.

Conclusion

This research was aimed at measuring digital skills and attitudes towards inclusiveness and diversity through the creation of DSTs by teacher candidates in the EFL classroom. In line with previous works (Heo, 2009; Yang and Wu, 2012), the results revealed the participants are open to change and willing to embrace transformative technology pedagogy. In this research, most participants who initially claimed they were quite aware about inclusiveness and diversity had problems to name children's stories related with certain themes and/or characters but nearly all of them agreed on the need to create more inclusive and diverse stories. Some tasks such as finding web-based images related with their DSTs turned to be a challenge, which made them become acquainted with the underrepresentation of inclusive stories and characters.

Concerning creativity, the teacher candidates clearly proved their digital skills and mastery through the collaborative design of 46 inclusive DSTs aimed at teaching English to children. Ethnic and cultural diversity as well as physical disabilities were popular themes, whereas the number of stories associated with mental disorders was comparatively lower. In line with Schmoelz (2018), two positive aspects related with the adoption of DST in the classroom were the engagement and shared enjoyment of all participants, which was later confirmed by their willingness to use their own stories as future English teachers. Although participants considered technical issues more

challenging, the main pedagogical problem was interpreting and performing their story in English.

DST was validated as an effective tool to promote critical thinking skills in the classroom since the participants shared and discussed their stories in a collaborative manner. The novelty of this experiment was to reinforce the critical digital literacy among teacher candidates by enhancing specific skills through the different stages such as analysing, creating, communicating, discussing and evaluating from an inclusive and diverse perspective. Team members had to negotiate and agree on different aspects related with their DSTs, and the class debate occasionally led to personal disclosure, making students aware of their own diversity in the classroom. Furthermore, the participation of children and parents unveiled the early presence of some stereotypes, making the teacher candidates become aware of the importance of digital stories in education.

In relation to the attitudes towards inclusiveness and diversity, there was a shift towards more favourable positions as regards the presence of SEN children in regular classes and less fear about children's acceptance and tolerance to the others but an increased concern about the teachers' workload. The participants also emphasized the need to include how to manage cultural diversity in teacher training programs by encouraging children to find common values through real-life situations and showing understanding and respect in the classroom. Concerning affective diversity, most of the teacher candidates supported the idea of teaching children about different family models and stressed the convenience to include them as part of the curriculum.

The originality of this research was to demonstrate that cooperative DSTs can be meaningfully integrated in the EFL classroom among teacher candidates from an inclusive perspective. The richness of the stories and the positive achievements in terms

of satisfaction and willingness to adopt DST as a learning tool was only possible thanks to the creativity and digital skills of the participants but these results are limited to the social and cultural context in which this experiment was carried out, so further research is needed to determine whether DST may also have an impact on the attitudes towards inclusiveness and diversity in different settings.

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