SLA Doctoral Students' Collaborative Digital Storytelling Experiences and Perceptions

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Abstract

Multiple studies in the field of teacher education have demonstrated the potential of digital storytelling to facilitate acquisition of teacher knowledge, critical examination of sociocultural or sociopolitical issues, and exploration and expression of identity or personal experiences. Some studies have also focused on the digital storytelling experiences and perceptions of education majors, particularly those at the undergraduate or master's degree level. This qualitative case study is an exploration of the perceptions and experiences of Second Language Acquisition doctoral students who collaboratively created digital stories to promote the use of different types educational technology (ET) in second/foreign language education. Thematic analysis of data indicated participants enjoyed their experiences, acquired ET knowledge, and learned about digital storytelling as a teaching-learning tool. Primary challenges they faced were employing unfamiliar ET and coordinating efforts with group mates. Discoveries support the use of digital storytelling as a motivational means of developing teacher knowledge while serving as a model of its use as a teaching-learning tool. Recommendations include creating opportunities for education majors to engage in reflection on their experiences, ensuring they can employ necessary ET (e.g., video editing software), and creating conditions for productive group work.

Keywords

Introduction

Multiple authors have published studies on digital storytelling use in various educational disciplines in recent years (Davis, Sydnor, & Coggin, 2017; Özüdoğru & Çakır, 2020a, 2020b; Ulusoy, 2020), including second/foreign language (L2) teacher education (Dell Jones, 2018; Røkenes, 2016; Vitanova, 2016). Purposes of digital storytelling projects and digital storytelling research have included identity work (Gachago, Cronje, Ivala, Condy, & Chigona, 2014; Vitanova, 2016), sharing personal experiences (Ng & Nicholas, 2015; Radford & Aitken, 2014), exploration and discussion of sociocultural or sociopolitical issues (Gachago, Condy, Ivala, & Chigona, 2014; Matias & Grosland, 2016; Van Galen, 2014), and development of teacher knowledge or competences (Çetin, 2021; Røkenes, 2016).

The numerous studies cited above, and the ones in the literature review, while only a fraction of the extant digital storytelling research, are an indication of the popularity of these multimodal projects in teacher education practice and research. As the use of digital storytelling continues to grow, a need exists to better understand how education majors experience and

perceive these multimodal projects. Insights gained may assist teacher educators and researchers in the design of digital storytelling projects that better meet course and curricular objectives and better serve the needs of pre- and in-service teachers. However, while there is research on the experiences and perceptions of undergraduate education majors in different disciplines (Çetin, 2021; Yigit, 2020), to my knowledge, few studies have involved an in-depth exploration of digital storytelling perceptions and experiences of doctoral students in the field of L2 education. A rationale for conducting research with such participants is that they are likely to become teacher educators and researchers after graduating, and their experiences and beliefs may influence if and how they employ digital storytelling in future teacher education work. Therefore, in this descriptive qualitative case study (Yin, 2014), I delineate and discuss ways in which 16 international Second Language Acquisition (SLA) doctoral students and a doctoral candidate in a course on Educational Technology (ET) use in L2 education perceived and experienced a collaborative digital storytelling project.

Epistemological and theoretical perspectives
In this section I describe my epistemological and theoretical beliefs, which influenced and guided my approach to this research project. A proponent of Post-Positivist and Post-Structuralist epistemological perspectives in research, I believe perceptions of truth are subjective and context-relevant (Richardson & St. Pierre, 2005; Tracy, 2012). Rather than trying to identify an objective truth (Denzin & Lincoln, 2005) in data, I take an interpretivist approach to research because what I "seek is the subjective truth of the research participants, the meanings they assign to their lives and cultures, perceived and understood through the researcher's experience, empathy and intelligence" (Court, 2018, p. 4). Furthermore, as an advocate of Constructivist (Fosnot, 2005) approaches to education, I believe that learning is most effective when students engage in active knowledge construction. Consonant with this belief, I also see value in experiential learning (Beard & Wilson, 2013) and goal-oriented approaches to learning, such as task-based learning (Bygate, Norris, & Van den Branden, 2018) and project-based learning (Gras-Velázquez, 2020), which contextualize learning and motivate learners (Dooly, 2013; East, 2018). Hands-on learning experiences such as digital storytelling are consistent with these approaches in that they engage students in projects with the goal of creating videos to share stories or inform. Research indicates these digital storytelling projects are motivational ways to learn for education majors (Yigit, 2020).

Research Question
The following research question guided this study: In what ways do SLA doctoral students perceive and experience a collaborative digital storytelling project?

Literature Review
Digital storytelling origins and definitions
While people have told stories with digital media such as television or videos for decades, the term "Digital Storytelling," with capital letters, has roots in community theater and storytelling work Lambert, Atchley, and Mullen performed in the San Francisco area in the 1990s (Lambert & Hessler, 2018). They sought to make sharing of personal stories more accessible to people who lacked familiarity with digital media technology (Story Center, n.d.). Lambert's (2013) vision of Digital Storytelling, expressed in its *seven components*, is that it entails creating brief (2–3 minute) videos of personal stories that authors narrate with their own voices. Lambert emphasizes the use of still over moving images and recommends the inclusion of background music "to add meaning and impact to the story" (p. 38). Since Lambert and his colleagues' pioneering work, people have employed digital storytelling for a broad variety of purposes in different disciplines (de Jager, Fogarty, Tewson, Lenette, & Boydell, 2017; Demirbaş & Şahin,

2020; De Vecchi, Kenny, Dickson-Swift, & Kidd, 2016). In the field of education, the range of what digital storytelling encompasses has expanded. Robin (2016) suggests that digital storytelling includes

> 1) personal narratives - stories that contain accounts of significant incidents in one's life; 2) historical documentaries – stories that examine dramatic events that help us understand the past, and 3) stories that inform or instruct the viewer on a particular concept or practice (ROBIN, 2006). (p. 18)

Educational researchers have employed definitions of digital storytelling that are consistent with or based upon, at least in part, the description Lambert (2013) offered (Oskoz & Elola, 2016; Robin, 2008a, 2008b, 2016). For example, Condy, Chigona, Gachago, and Ivala (2012) offered the following succinct definition: "A digital story is a multimedia text incorporating still images complemented by a narrated soundtrack to tell a story or present a documentary" (p. 279). Røkenes' (2016) definition provides details about length and tools: "In an educational context, digital stories (DS) are short videos (90–120 seconds long) composed of a series of still images with overlaying narration using basic video editing tools such as Movie Maker and iMovie (Ohler, 2013)" (p. 313). Bran (2010) included a rationale for background music: "Additional music is sometimes used to invoke emotion or induce other effects" (pp. 1791–1792). For the purpose of this study, I suggest the following operational definition of digital storytelling in educational contexts, which I synthesized from these authors' descriptions: Digital stories are brief videos (approximately 2–10 minute) in which authors narrate personally relevant experiences or share knowledge or viewpoints. They consist of still or moving images and may feature background music and/or onscreen text.

Digital storytelling in teacher education research
Instructors and researchers have employed digital storytelling in teacher education in numerous disciplines, including Mathematics (Islim, Ozudogrua, & Sevim-Cirak, 2018; Karaoglan Yilmaz & Durak, 2018), Physics (Kocakaya, Karakoyun, & Kotluk, 2016), Educational Technology (Çetin, 2021), Science (Ng & Nicholas, 2015), Social Studies (Yigit, 2020), Special Education (Albano & Iacono, 2019), Early Childhood Education (Kildan & Incikabi, 2015), Primary Education (Shelton, Archambault, & Hale, 2017), first-language education (Özüdoğru & Çakır, 2020a; Robertson, Hughes, & Smith, 2012), and L2 education (Asik, 2016; Bozdogan, 2012). Other digital storytelling studies have involved education majors from multiple disciplines (Heo, 2011; Hodge & Wright, 2010). The majority of digital storytelling studies that I have identified focus on undergraduate students (Kalyaniwala-Thapliyal, 2016; Kocaman-Karoglu, 2016), although some involve master's degree-level students (Dell Jones, 2018; Van Galen, 2017). Few studies appear to focus on doctoral students, particularly in the field of L2 education.

Teacher educators and researchers have employed digital storytelling projects for numerous purposes, including engagement with peers (Chigona, 2013; Mannion & Liontas, 2022), identity work (Gachago, Cronje, et al., 2014; Vitanova, 2016), reflection on and expression of personal experiences (Ng & Nicholas, 2015; Radford & Aitken, 2014), exploration of social issues (Alcantud Diaz, 2016; Buckley-Marudas & Martin, 2020; Matias & Grosland, 2016), and development of teacher knowledge (Kildan & Incikabi, 2015; Røkenes, 2016) or competences (Çetin, 2021). Other objectives have included exploration of education majors' experiences with and perceptions of digital storytelling (Özüdoğru & Çakır, 2020a; Park, 2019; Yigit, 2020) and investigation of the contents of education majors' digital stories (Bozdogan, 2012; Davis et al., 2017).

Engagement with peers, identity work, and reflection

Digital storytelling projects have served as means for education majors to interact or collaborate with peers (Kalyaniwala-Thapliyal, 2016). For example, the role digital storytelling could play in formation of a community of practice (Wenger, 1998) was among the purposes of studies by Chigona (2013) and Mannion and Liontas (2022). Education majors have also employed digital stories to explore and express their identities (Vitanova, 2016). Identity-related topics in digital storytelling studies have included sharing personal counterstories (Gachago, 2016; Gachago, Cronje, et al, 2014), shame related to socioeconomic class (Van Galen, 2014, 2017), and reflection on social (in)justice (Gachago, Condy, et al., 2014) and racial prejudice (Matias & Grosland, 2016). Digital storytelling studies involving reflection on practice have focused on subjects such as challenging practica experiences (Ng & Nicholas, 2015; Radford & Aitken, 2014) and practica which engaged education majors in identifying and assisting struggling learners (Dreyer, 2017). Buckley-Marudas and Martin (2020) pointed out the value of digital storytelling in having pre-service teachers reflect on literacy practices, both their own and those of their students. An attraction of digital storytelling for these types of purposes, among others, in teacher education may be that it offers multiple modalities with which to express meaning (Gachago, Cronje, et al., 2014; Ng & Nicholas, 2015), including emotional meaning (Gachago, Ivala, Chigona, & Condy, 2015).

Teacher cognition

Multiple authors have explored how digital storytelling projects can impact teacher cognition. Some studies have focused on different types of teacher abilities or competences, including multimodal literacy (Ibarra-Rius & Ballester-Roca, 2019), 21st-century skills (Kocakaya et al., 2016; Yigit, 2020), writing self-efficacy (Özüdoğru & Çakır, 2020a, 2020b), and narrative and communicative competence (del Moral, Villalustre, & Rosario Neira, 2016). Other studies have also focused on disciplinary knowledge (Hodge & Wright, 2020), including target-language competence of pre-service teachers (Hanington, Pillai, & Foong, 2013). Authors have explored the impact of digital storytelling on L2 abilities such as EFL writing competence (Alcantud Diaz, 2016), oral communication (Soler-Pardo, 2014), and grammatical accuracy (Reyes, Pich, & García-Pastor, 2012).

Another teacher knowledge-related objective of digital storytelling projects has been to increase education majors' pedagogical knowledge, or experience with digital storytelling as a teaching-learning tool (Alcantud Diaz, 2016; Göçen Kabaran & Alkan Karademir, 2017; Karaoglan Yilmaz & Durak, 2018; Kildan & Incikabi, 2015; Kobayashi, 2012). Findings of such studies indicate education majors have generally positive perceptions of digital storytelling as a teaching-learning exercise (Shelton et al., 2017), including beliefs that it motivates students (Kobayashi, 2012; Yigit, 2020); contextualizes learning and makes learning interesting and relevant (Albano & Iacono, 2019); and develops 21st-century skills (Karakoyun & Kuzu, 2016; Partnership for 21st Century Skills, 2003).

Findings of other studies indicate digital storytelling has a positive impact on ET-related abilities, beliefs, or practices, including digital self-efficacy and dispositions (Heo, 2009, 2011), digital literacy (Çetin, 2021), digital skills (Alcantud Diaz, 2016), digital competence (del Moral et al., 2016; Røkenes, 2016), and perceptions and behaviors (Kocakaya et al, 2016; Konokman & Yelken, 2016). Some authors have employed the TPACK framework (Koehler & Mishra, 2009) to explore how digital storytelling can influence acquisition of intersections of three different types of knowledge: *technological*, *pedagogical*, and *content* (Kildan & Incikabi, 2015; Sancar-Tokmak, Surmeli, & Ozgelen, 2014). The TPACK framework emphasizes the importance of teachers knowing how to employ technology to teach

disciplinary knowledge (Koehler & Mishra, 2009). Research findings indicate digital storytelling can positively impact the TPACK of pre- (Asik, 2016; Ulusoy, 2020) and in-service teachers' (Clarke, 2017).

Content analysis

Researchers have also focused on the contents of education majors' digital stories. Bozdogan (2012), for example, analyzed characters in pre-service teachers' didactic digital stories to determine if they had employed gender stereotypes with story characters they had created. Ng and Nicholas (2015) analyzed contents of pre-service teachers' digital stories to identity "risk and protective factors" (p. 737) related to resiliency in teaching practica. Davis et al. (2017) explored how teacher candidates portrayed roles of teachers and students in their digital stories.

Experiences and perceptions

Multiple authors have conducted research on education majors' experiences with and/or perceptions of digital storytelling. Participants in multiple studies have found digital storytelling to be enjoyable and/or motivational (Özüdoğru & Çakır, 2020a; Park, 2019; Yigit, 2020). Pre-service EFL teachers in Asik (2016), for example, found satisfaction with their completed digital stories, enjoyed sharing them, and believed didactic digital stories are motivating for students. Pre-service teachers in Kocaman-Karoglu (2016) considered digital storytelling an effective means for expressing emotions and ideas. Challenges with digital storytelling cited in studies included employing technology (e.g., software) needed for creating and editing digital stories (Özüdoğru & Çakır, 2020a; Yigit, 2020), finding suitable images (Göçen Kabaran & Alkan Karademir, 2017), drafting narration (Asik, 2016), and narrating stories (Kildan & Incikabi, 2015).

As the number of studies reviewed here indicates, multiple teacher educators and researchers have employed digital storytelling for a variety of purposes. Therefore, a need exists to explore how education majors experience and perceive digital storytelling projects. Insights gained from such research may contribute to improving the quality of the processes and outcomes of these multimodal projects.

Methods

I employed a descriptive qualitative case study design (Yin, 2014) to explore the data in detail, attain a deeper understanding, and develop a detailed description of participants' experiences and perceptions. According to Borg (2006), qualitative inquiry enables researchers to "portray in rich detail what teachers do and the factors behind their work" (p. 288). Qualitative data analysis furthermore enables researchers to study phenomena within their contexts and explore the meanings people attach to those phenomena (Denzin & Lincoln, 2005). This case study is *descriptive* because its "purpose is to describe a phenomenon (the 'case') in its real-word context" (Yin, 2014, p. 238).

Context

This study was part of a larger research project focusing on ET-related beliefs of Second Language Acquisition doctoral students that occurred in the College of Education at a large, public research university in a suburban area in the Southeast of the US. Participants were enrolled in a six-week doctoral-level summer seminar on the use of Computer-Assisted Language Learning (CALL) and Mobile-Assisted Language Learning (MALL) in L2 education. A hybrid course, it combined weekly on-campus meetings with asynchronous discussions in the university's Learning Management System. Major course assignments were participation in weekly asynchronous online discussions, writing a review of a website or

software application, compiling an annotated bibliography of research on ET use in L2 education, and collaboratively creating a digital story promoting CALL or MALL use in L2 education. The university's Institutional Review Board provided me with permission to conduct this research.

Participants

Sixteen doctoral students in their first, second, or third year in a program focusing on SLA and ET participated in this study. In addition, I invited a fifth-year doctoral candidate to participate in the study because he had attended all course meetings and took part in the course's digital storytelling project with two different groups. The seventeen participants were from ten different countries: China, Cuba, Indonesia, Kuwait, Libya, Malaysia, Saudi Arabia, Turkey, the United States, and Venezuela. All were multilingual and identified one or more of the following as a first language: Arabic, Chinese, English, Indonesian, Malaysian, Spanish, Tuareg, and Turkish. To safeguard participants' privacy, I identify them with numbers instead of names (S1, S2, S3, etc.). To recruit participants, I described the study to them in detail, explained what participation entailed, and informed them of their rights as study participants. I also provided recruitment flyers containing the same information. All 16 doctoral students and the doctoral candidate agreed to participate and signed informed consent forms. However, it is important to note that because I was enrolled in the same doctoral program as the participants, although in an earlier cohort, I possessed some prior personal knowledge of some participants.

Collaborative digital storytelling project

For a course assignment, participants collaboratively created digital stories in a narrative format that promoted a type of CALL or MALL technology of their choosing. The course instructor directed participants to imagine their audiences were in-service L2 teachers engaged in professional development. The digital stories were not to exceed ten minutes in length. Participants self-selected members of their digital storytelling groups, forming a total of four groups with four or five members in each. The groups chose the following as topics: Augmented Reality, Learning Management Systems, Google Apps, and educational games and immersive technology (Augmented Reality, Virtual Reality). For further discussion of this project, see Liontas (2020), Mannion (2020), or Mannion and Liontas (2022).

Data collection

I collected and explored three sets of data that included participants' expressions of their digital storytelling experiences and perceptions: asynchronous online discussion posts, semi-structured interviews, and a digital survey. The collection of multiple data sets was for triangulation purposes and to achieve a deeper understanding of the participants' experiences and perceptions (Yin, 2014). I completed the entirety of data collection and majority of data analysis before the outbreak of the COVID-19 Pandemic (World Health Organization, 2021).

Online asynchronous discussions

For a course assignment, participants engaged in weekly online asynchronous discussions (henceforth *discussion*) in the course's learning management system on topics related to CALL, MALL, and/or L2 pedagogy. For each discussion, participants posted critical reflections on the week's topic and responded to classmates' posts. I collected participants' posts in the discussion threads in the belief that they would provide insights into participants' perceptions of and experiences with digital storytelling.

Digital survey
After conclusion of the course, I invited all participants to take part in a digital survey, which I created with Google Forms, to collect demographic data and information about their perceptions, experiences, and interests related to both ET and digital storytelling. Fourteen participants responded to the survey.

Semi-structured interviews
In order to collect data from members of all four digital storytelling groups, and to explore participants' digital storytelling perceptions and experiences in more detail, I randomly selected two participants from each group to invite for semi-structured interviews. While all eight participants accepted the invitation, because I could not arrange an interview with one participant, I conducted seven interviews. Please see Table 1 for a list of participants' nationalities and native language. Six interviews were face to face; however, I conducted one with a video conferencing tool because the participant had moved to a distant location following the conclusion of the course. Each interviewee provided me with permission to make audio recordings of the interviews, which were approximately 30 minutes to one hour in length. Following the interviews, I transcribed the recordings word for word.

Table 1
Interview Participants

Participant	Nationality	Native Language	Gender
S2	Saudi Arabia	Arabic	F
S4	Venezuela	Spanish	F
S7	Indonesia	Indonesian	F
S8	Turkey	Turkish	F
S11	Kuwait	Arabic	F
S13	United States	English and Spanish	F
S14	Saudi Arabia	Arabic	F

Data analysis
I employed thematic analysis (Guest, MacQueen, & Namey, 2012) to search for themes in the data related to the participants' digital storytelling perceptions and experiences. Because I believed I had a large amount of data, I employed MaxQDA (VERBI Software, 2019), a type of qualitative data analysis software, to facilitate the process of searching for themes across the three data sets. After uploading the interview transcripts, discussion posts, and digital survey responses into the software, I read through the data to familiarize myself with them. While carefully reading through the data again, I made notes, highlighted places of interest, and developed codes representing the meaning or significance of sections of data. In subsequent rounds of analysis, I organized similar codes into groups. To facilitate this process, I employed a code-mapping tool in the qualitative data analysis software to help me visualize how I could group the codes. As this was an iterative process, I re-sorted and re-organized codes multiple times. In the final stages of analysis, I organized code groups into themes related to the focus of this study.

Discoveries
Through the process of thematic analysis (Guest et al, 2012), I identified three themes in the data related to participants' digital storytelling perceptions and experiences: (1) positive project experiences and perceptions, (2) outcomes or benefits of participation, and (3) challenges participants faced. In the following paragraphs, I describe each of these themes in detail and illustrate them with examples from the data.

Positive experiences and perception: processes and products

In general, participants' digital storytelling experiences and perceptions were positive. Eleven participants (S2, S4, S5, S7, S9, S11, S13, S14, S15, S16, S17) stated they found the project enjoyable, likeable, or interesting. They described their experiences with terms or phrases such as "fun" (S2), "fantastic" (S14), "great experience" (S7, S16), and "rewarding" (S2, S5). The following statement by S12 is representative of many of her classmates' experiences: "This project was creative and effective. It had served the purpose of us showcasing our knowledge of the field, technology, personalities, as well as being effective for a 6 weeks course."

In addition to broad positive evaluations, participants noted specific aspects of the project they enjoyed. In particular, participants had positive perceptions of collaborative aspects of their work. Five participants (S1, S2, S8, S13, S17) stated that collaborating with group mates was interesting and/or enjoyable. One example is S17, who stated "[i]t was an interesting experience, in particular working with my team members." Multiple participants agreed with S8's belief that opportunities to "to divide the labor" among group members and share their "strengths" were positive aspects of collaboration. S8 also noted that being a member of a group motivated her and made her feel responsible for working quickly and creating high quality products. Another positive aspect of collaboration for multiple participants was, as S2 put it, opportunities to "share our knowledge and experiences." S17 similarly "relish[ed] the opportunities of learning new things and insights from my peers." Regarding specific types of knowledge, S5 thanked S14 for introducing him to an animation tool called PowToon (PowToon Ltd., 2020) that can be used to create digital stories. However, while the majority of the participants agreed with S7's general assessment that "We collaborated well," some participants noted that collaboration involved some challenges, which I address in the third theme.

In addition to collaboration, participants identified other positive aspects of their digital storytelling experiences. S4, S6, and S7, for example, enjoyed design or initial creation phases of their digital stories. S5, however, noted that he enjoyed later phases, "editing" in particular. Some participants stated they achieved a sense of satisfaction derived from their efforts, such as successful inclusion of humor in the digital story (S8), "the final production" (S15), and the creation of a "personalized" digital story (S9). As these examples attest, participants positively perceived various aspects of their digital storytelling experiences.

Outcomes or Benefits of Participation

In contrast to the first theme, which involved positive perceptions of *processes* (e.g., collaborative efforts) or *products* (e.g., digital stories) of digital storytelling, the second theme I identified in the data focuses on participants' beliefs about personal outcomes or benefits of participation in their projects. Benefits included acquisition of knowledge and changes in beliefs about ET. Participants acquired knowledge and altered their beliefs by creating and editing their digital stories, engaging in project-related research, interacting with group partners, and viewing other groups' digital stories.

The primary positive outcomes that participants cited were acquiring knowledge about ET and learning how to create digital stories. S1 and S4, for example, learned about creating and editing digital stories, with the latter stating, "I learned how to combine audio, images etc. The creation in general of the story." Participants also noted they had acquired knowledge of specific types of technology. S5, S10, and S14 stated they had learned about PowToon, an animation tool. S10 additionally learned about Audacity, an audio file editing tool. S11 acquired knowledge

about "AR and VR", of which she previously known little, and S16 became more familiar with Canvas, a brand of Learning Management System.

Learning how to employ digital storytelling as a teaching-learning tool was another benefit for multiple participants. S8, who gained ideas about how to employ digital storytelling projects effectively with students, realized that "[p]lanning is really important and good-quality equipment will make me shine." Participants learned that digital storytelling could serve as an effective means of introducing new knowledge to students. S6, who believed he had learned "a great way to connect our students to the world," explained potential benefits of digital storytelling:

> [T]eaching using video is an amusing experience for both teacher and students. Teachers who use video story telling save more time and explain more content than those who depend on their own voice or pictures to talk about some topics.

S7 expressed similar views about the potential of didactic digital storytelling: "Digital story [*sic*] should be used as an approach in presenting ideas in the classrooms." S15 believed the multimodal affordances of digital storytelling would make it useful for "introducing the abstract concepts that might be difficult to explain through words."

Participants indicated they could facilitate learning by having students create their own digital stories. S2 "learned that this project can be helpful in different ways including enhancing collaborative work, developing the learners' speaking and writing skills, [and] increasing the learners' motivation towards learning." S10 believed digital storytelling projects enable "Digital Natives" to apply their creativity, and that, in general, "[t]he possibilities are endless." Multiple participants, as these examples illustrate, believed that having students view or create digital stories would be effective and motivational methods of learning.

The digital storytelling project positively influenced some participants' beliefs about ET use and pedagogical practices. S2, for example, stated, "I have a stronger believe [sic] now that any instructor can use educational technology in their classes." Participation in the project led S9 to "like using new technology," and S10 indicated the project "allowed me to be open to the diversity of different technologies and their role in education." An insight S13 gained from her digital storytelling experience was that "[i]t is vital for the next generation of teaching to include educational technology in instruction." S8 stated the digital storytelling project had a positive influence on her beliefs about ideal pedagogical practices: "I would try harder to create meaningful assignments, or meaningful projects, where my students can get involved in authentic input and purposeful output." However, while these participants credited the digital storytelling project with having a positive influence upon their perceptions of ET, other participants (S2, S7, S9, S13, S16, S17) indicated it did not have a significant impact on their ET-related beliefs or knowledge.

Challenges
A third theme in the data related to challenges participants faced during their projects. Frequently cited challenges involved the technology participants employed to create and edit their digital stories. S4, S5, S9, S10, and S14, for example, found unfamiliarity with multimedia editing software, or learning how to use it, to be challenges. Video editing tools were challenging for S4 "because some of them were new for me [her]." S10 similarly stated, "Learning the technology was initially a challenge, but rewarding." S5 considered "[f]ilming and sound recording, [and] editing" to be difficult, while S14 found that "[i]t was a real

challenge designing 8 minutes of advertising video in a program that I used for the second time and in a limited period of time." S7 noted that for her group, "the editing post-production part was really time consuming as well." As these examples illustrate, participants encountered difficulties employing or learning how to employ technology involved with the construction of digital stories.

Other challenges for participants related to qualities of resources they employed or failed to employ. S4 believed "my equipment is not good enough" for the project, while S8 found that her group's failure to use "professional-quality equipment" resulted in "audio input" of poor quality. For S1, the "cost of some editing tools" was a concern. S14 felt challenged by "[f]inding the correct images and citing them in the video to avoid copyright issues." Obtaining and employing suitable, appropriate, and/or affordable resources, as these examples demonstrate, was challenging for some participants.

While perceptions of collaborative aspects of the digital storytelling project were largely positive, some participants indicated that working together presented some challenges. For S4, having "to divide what you have to do" could be difficult. S16 found that "[a]s most of group projects, coordination and timing finalizing the project was a little stressful. Combining ideas and different expectations was a bit of a challenge but at [t]he end we got a very interesting digital story." S17 addressed similar issues, stating, "I think the communication and time schedule among my team can be a challenge. So sometimes we were not able to be on the same page." However, while coordinating group efforts could involve some difficulties, participant comments about collaborative work were mostly positive.

Participants cited other challenges, although not with the frequency of those related to ET, resources, or collaboration. S15 found it challenging to produce a digital story "both fun and engaging to watch." S7 felt challenged by time management. Challenges for S2 occurred in the initial stages of the project, which involved selecting the necessary software and developing "the initial idea" that would guide group efforts.

Discussion

The purpose of this study was to explore SLA doctoral students' experiences with a collaborative digital storytelling project whose purpose was to promote the use of different types of ET in L2 education. Through thematic analysis (Guest et al., 2012) of the data, which were discussion forum posts, responses to a digital survey, and semi-structured interviews, I identified three themes. One theme related to participants' reports that multiple aspects of the project were enjoyable or interesting. Participants employed terms such as *interesting*, *fun*, *rewarding*, and *proud* to describe their feelings about the project. Activities participants enjoyed included editing their digital stories and collaborating with group mates. A second theme in the data related to personal benefits from participation in the digital storytelling project. Primary benefits were acquisition of ET knowledge, improvement in attitudes or beliefs about ET, and learning about a type of teaching-learning activity (digital storytelling) to employ with their own students. A third theme in the data involved challenges participants faced during the digital storytelling project. Frequently cited challenges related to employing unfamiliar technology, obtaining and employing resources needed to create good quality digital stories, and coordinating activities with group members.

Enjoyment, motivation, and collaboration

The discoveries of this study, along with findings of other research (e.g., Özüdoğru & Çakır, 2020a; Yigit, 2020), indicate digital storytelling can be motivating and enjoyable experiences

in teacher education. For participants in the present study, part of the enjoyment was a sense of achievement or pride gained from their completed digital stories. Collaboration with group mates was another of the most positive experiences for participants. They were satisfied with groupmates' collaborative efforts and contributions. While most of the digital storytelling studies I discussed in the literature review involved individual projects, the findings of the present study and other studies involving group projects (Albano & Iacono, 2019; Alcantud Diaz, 2016; Kalyaniwala-Thapliyal, 2016; Røkenes, 2016) suggest that collaborative digital storytelling projects can be positive experiences. Pre-service EFL teachers in Røkenes (2016), for example, found group work to be "helpful and efficient" (p. 322). The pre-service teachers in Kalyaniwala-Thapliyal (2016) collaborated effectively by assigning tasks that suited individual members' characteristics. Participants in the present study similarly noted that being able to divide tasks and employ members' strengths were positive aspects of their group work. Another positive aspect of collaboration was learning about ET from peers.

However, while participants had positive perceptions of their collaborative efforts, they also considered working together to involve some challenges, such as assigning roles and coordinating group efforts. Teacher educators interested in collaborative digital storytelling projects may wish to consider, if possible, encouraging and facilitating smooth communication among group members. Research on small-group discussion activities, while admittedly different from digital storytelling, indicates that well-defined roles can help make group work go more smoothly (Hambacher, Ginn, & Slater, 2018).

Pedagogical knowledge

The digital storytelling project in the course served as a model of a type of multimodal teaching-learning activity participants could employ with future students. In multiple other studies, education majors practiced creating didactic digital stories to use with their own students (Albano & Iacono, 2019; Alcantud Diaz, 2016; Göçen Kabaran & Alkan Karademir, 2017; Shelton et al., 2017). Participants in the present study pointed out how digital storytelling would be an effective and motivational teaching-learning activity for L2 students. Some participants noted that the multimodal affordances of digital storytelling may make it particularly effective for introducing and teaching abstract concepts. Indeed, multimodal support may be particularly helpful in the participants' field, SLA, because multiple modalities may make it easier for L2 students to comprehend course material (Mayer, 2014; Sadoski & Paivio, 2001). Participants additionally believed students could learn from creating their own digital stories, which would, as participants pointed out, have the added benefit of enabling them to share their culture or a "topic of interest" (S6). Teacher educators may wish to consider implementing digital storytelling projects in their courses as they have the potential to add to education majors' repertoire of teaching-learning activities.

ET knowledge and dispositions

One of the most-cited benefits of the digital storytelling project was participants' improvement of ET-related knowledge, skills, and dispositions. These discoveries are consistent with findings of multiple studies demonstrating the impact of digital storytelling on education majors' knowledge of or competence with digital technology (Alcantud Diaz, 2016; del Moral et al., 2016; Çetin, 2021; Kildan & Incikabi, 2015; Kocaman-Karoglu, 2016; Røkenes, 2016), and self-efficacy and dispositions (Heo, 2009, 2011). Participants learned about video editing, audio editing, and animation tools. Furthermore, some participants acquired knowledge about different types of CALL or MALL technology, such as AR and animation software, from the subject material of their own or other groups' digital stories. Teacher educators may find digital storytelling projects effective for helping education majors develop ET knowledge or skills,

particularly technology related to creating and editing videos. Consideration of the TPACK framework (Koehler & Mishra, 2009) may prove useful in designing digital story projects that promote intersections of *technological*, *pedagogical*, and *content* (disciplinary) knowledge (Asik, 2016; Clarke, 2017; Sancar-Tokmak et al., 2014).

Challenges

Participants' most commonly cited challenges related to employing unfamiliar software to create and edit digital stories. These findings are consistent with those of other authors (Özüdoğru & Çakır, 2020a; Park, 2019; Shelton et al., 2017; Yigit, 2020), who found that the pre-service teachers were challenged by technology needed to create their digital stories. Teacher educators who are interested in implementing digital storytelling projects may wish to inquire into students' ET skills beforehand. Formal or informal surveys may help them gain insight about education majors' proficiency with necessary hardware or software. If education majors lack competence or confidence, teacher educators may wish to provide training or tutorials. In the case of collaborative projects, such as the present study, ensuring that at least some group members possess the requisite skills may be useful.

Locating copyright-free or otherwise suitable images to employ in digital stories also posed difficulties for some participants. These findings are similar to those of Kildan and Incikabi (2015), whose participants indicated it was difficult to obtain images for their digital stories. If teacher educators plan to implement digital storytelling projects, they might find it beneficial to address copyright issues, particularly if there are plans to publish digital stories in a public forum (e.g., YouTube, Instagram). Sharing digital stories in public forums may also necessitate addressing privacy issues, particularly if participants include personal information in their stories.

Reflection on digital storytelling experiences

Finally, as research indicates reflection is key to knowledge construction following learning experiences (Beard & Wilson, 2013), it may be beneficial to have education majors reflect on digital storytelling experiences through means such as discussion forums or reflection papers. In the present study, while I conducted semi-structured interviews and conducted a survey following conclusion of the course, much of the data about participants' experiences and perceptions came from what they had posted in the course discussion forum. These discussions enabled participants to reflect on and express their interpretations of their participation in the project. The interactive nature of discussions furthermore engaged them in negotiation of the meanings they assigned to shared experiences. While such opportunities to engage in knowledge construction are undoubtedly beneficial to education majors, insights gained from reflective activities may additionally assist teacher educators and/or researchers in the design and implementation of future digital storytelling projects.

Limitations

A limitation to this study is that my familiarity with some participants, who were in the same doctoral program as I was, may have influenced my perceptions. Another limitation is that as this study involved a collaborative digital storytelling project, its implications may be of limited relevance to individual digital storytelling projects.

Conclusion

In this descriptive qualitative case study (Yin, 2014), I describe experiences and perceptions SLA doctoral students reported having in collaborative digital storytelling projects whose purpose was to promote ET use in L2 education. Discoveries indicated participants perceived

their digital storytelling experiences to be largely positive, including collaborative aspects of the project. They believed benefits of digital storytelling included improvement in ET knowledge, skills, and dispositions. Participants also acquired knowledge about digital storytelling as a type of teaching-learning activity they could employ with their own students. Challenges participants faced included employing unfamiliar technology to create digital stories, acquiring suitable or effective resources for their digital stories (e.g., hardware, software, copyright-free images), and coordinating group efforts. These discoveries support the findings of other studies indicating education majors may find digital storytelling projects a motivational way to collaborate with peers (Chigona, 2013; Mannion & Liontas, in press) and acquire teacher knowledge (Çetin, 2021; Kildan & Incikabi, 2015). Discoveries also suggest that while group work may present some challenges, collaborators can also divide the labor and share knowledge.

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