Digital storytelling in the classroom: How to tell students to tell a story

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Abstract: A design case study was used to investigate a unique means of introducing students to a digital storytelling assignment. The origin of this design case was the idea to use a digital story to present a digital story assignment. In this design case, we reflect on the design decisions that were made in light of the varied and unique requirements imposed by the particular educational context. We also illustrate the digital storytelling artifacts that were developed. Delivering (storytelling) the outline of an educational assignment in this isomorphic manner proved to be an effective means of communicating the nature and requirements of the storytelling project.

Keywords: digital storytelling; storytelling; DST; tell a story; classroom; learning; teaching; education; assignment; isomorphic; Scratch; comics; design case; reflective practice; autoethnography; case study.

Introduction

Storytelling constitutes an organic part of human culture. In oral tribes, storytelling was the only available media for conveying all previously-accumulated knowledge to the next generations. In literal societies, storytelling keeps its salient role as an enculturation tool: as a vehicle to share cultural knowledge and cultural norms among human groups. Storytelling is an efficient way to foster a group's cohesion and increase a community's well-being: "American Indians and Alaska Natives have traditionally used stories and drawings to positively influence the well-being of their communities" (Montgomery *et al.*, 2012, p. 1). Every culture develops its unique techniques and tools to use in a storytelling process (Frazel, 2010; Miller, 2013). In prehistoric times, cave paintings were used on cave walls to share and tell human stories, focusing mainly on themes about hunting.

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In the years preceding the rise of the internet, mediums like photos and videos were utilized as modern storytelling apparatuses (Lambert, 2013). In today's networked era, in which digital tools are ubiquitous, sophisticated digital applications and previously unimagined techniques are now available to the modern storyteller for the production of multimodal digital storytelling artifacts. In the Lambert's tradition of digital storytelling, it is a form that integrates photographs, music, optional video and the emotionally loaded voice of the narrator into a brief, about 2-4 minute, digital movie (Lowenthal, 2009; Kearney, 2011). It is our home culture that provides us with the available toolkit to express our inner world, to tell a story, to listen carefully, and, through this cognitive-emotional process, to share values, norms, thoughts, and emotions: "It is culture that provides the tools for organizing and understanding our worlds in communicable ways. The distinctive feature of human evolution is that mind evolved in a fashion that enables human beings to utilize the tools of culture." (Bruner, 1996, p. 3).

Digital storytelling, which is storytelling through the use of modern digital technologies, is an extension of the archetypal cultural tradition of oral storytelling, but it differs substantially from the precedent forms: "The digital storytelling genre comes with its own unique characteristics" (Kearney, 2011, p. 184). Different tools and techniques imply different affordances for the storytelling lived experience: "Human action is closely linked to communication processes and the use of cultural tools, both material and abstract" (Erstad and Wertsch, 2008, p. 24).

A digital storytelling artifact is a multimodal, virtual telling. Contrary to oral storytelling, digital storytelling is not something that can only be experienced by an audience when it is "live" or "on the air" by a storyteller. A digital multimodal storytelling artifact is, however, directly related to its oral interpretation and representation. As Ong (2002) has explained, "Written texts all have to be related somehow, directly or indirectly, to the world of sound, the natural habitat of language, to yield their meanings. 'Reading' a text means converting it to sound, aloud or in the imagination" (Ong, 2002, p. 8).

In many instances, a digital storytelling artifact can be experienced online anytime, anywhere, by anyone. It is also a nonlinear form of information transmission, in that it is not addressed nor delivered to a particular audience. "It is not communication seen in a linear fashion as something transmitted from a sender through a channel to a receiver" (Erstad and Wertsch, 2008, p. 24). Today, the traditional, bidirectional communication between the "teller" and the "listener" (Lambert, 2013) can be established asynchronously or synchronously over the internet through numerous social media platforms, using a plethora of different digital modalities (Kress, 2010). The so-called "digital natives" and the so-called "digital immigrants" (Prensky, 2001)

both consume more and more online digital artifacts and multimodal media productions (Kress, 2010), ranging from YouTube videos to photos and digitized proverbs, and share them among friends on social media like Facebook. All these multimodal digital artifacts tell many stories: stories that are told by a virtual or an invisible storyteller to a real world and, in many cases, a worldwide "audience."

The ICT (Information and Communication Technologies) education movement recognizes digital storytelling as a key component of 21st Century learning technologies; digital storytelling is now utilized as a key learning tool in many formal and informal educational settings (McLellan, 2007; Robin, 2008; Blas, Paolini and Sabiescu, 2010). Digital storytelling in formal education allows students to become active producers of multimodal digital stories, while the way they consume stories made by others changes dramatically: students become digital-literate and content-critical about what is narrated in social media and presented as an unquestionable truth (Brailas, 2011). Therefore, digital storytelling is now considered to be a well-established and widely recognized transformative educational practice in a range of disciplinary contexts, allowing educators to captivate students interests and establish their social presence (Lowenthal, 2009; Lowenthal and Dunlap, 2010; Kearney, 2011).

In the present design case study, two digital storytelling artifacts were investigated: two artifacts that were both produced by an educator for effectively communicating the requirements of a digital storytelling assignment to a student audience. A design case study is defined as the systematic and detailed description of a real world artifact that has been intentionally designed and produced to serve an educational purpose (Boling, 2010; Smith, 2010). The intervention took place in the computer room in an urban high school in Athens, Greece, during the 2013-14 school year.

Research approach

In many applied disciplines, such as teaching and pedagogy, research reports and studies are often undertaken, initially, not to produce research evidence, but to inform a practitioners' professional action (Perneger and Hudelson, 2004). However, there is substantial knowledge embedded in the everyday experiences of such practitioners: "some pedagogical knowledge can best be understood as 'knowledge in pieces,' rather than as a coherent system of pedagogical beliefs" (Kali, Goodyear and Markauskaite, 2011, p. 129). This knowledge can be realized and acknowledged in the form of a detailed reflective report that will provide a situated "thick description": a storytelling of the practitioner's lived experience that will inform other practitioners in the field. As Selwyn (2011) has pointed out, "Research and writing in the area of

media, technology and education is essentially a matter of storytelling" (Selwyn, 2011, p. 211). Therefore, the present case study builds on reflective observations and personal research notes captured in a fairly unstructured manner and then systematized for the purpose of writing this paper.

The term "reflective practice" was introduced by Donald Schon in his seminal book, *The Reflective Practitioner* (1983). His work was enthusiastically adopted by educators, health professionals, and other practitioners who wanted to apply knowledge to practice, and learn from their practice while being advised or supervised by peer professionals. A reflective practitioner can easily provide a thick description of her experience that can be useful and inspiring to other practitioners (Schön, 1983; Baaki, Tracey and Hutchinson, 2016).

A design case is "a description of a real artifact or experience that has been intentionally designed. A case may be as minimal as an individual image of a commercial product, a building, an advertisement, a classroom or anything else designed" (Boling, 2010, p. 2). A design case can be easily produced by a teacher–the actual designer of an educational activity–as long as she keeps detailed notes and reflections: "In the design case, the author will often be part of the design team (or the sole designer) and thus is likely to have had prolonged engagement with the design" (Smith, 2010, p. 12). Boling (2010) has pointed out that, "the memory of having experienced an existing design is a memory that contains special forms of knowledge" (Boling, 2010, p. 2). This project sought to discover and articulate, through thick description of the design case, the special knowledge that might be embedded in two digital storytelling artifacts that were utilized to communicate effectively and in an isomorphic way the requirements of two digital storytelling assignments. This embedded design case knowledge informs the reader (listener/observer) about critical design decisions, obstacles encountered, and the feasibility of the overall design. This kind of embedded knowledge (Oxman, 1994) can be valuable to other educators and practitioners in planning analogous interventions. However, the utility of a design case and its fit to a different domain is determined by those who use it (Smith, 2010).

A design case usually covers the design process from the inception of an idea through its design and implementation in the form of a concrete learning artifact (Boling, 2010). This research approach shares common epistemological ground with traditional naturalistic studies and the action research tradition, by providing methods for "approaching situations to which a priori frameworks are often not applicable, in which the researcher is often a participant (instead of an outsider), and in which the applicability of the warranted assertions of the research is left to the reader's judgment" (Smith, 2010, p. 3). Being part of the research outcome is something that an action researcher acknowledges and celebrates, instead of denying. Action research

is “carried out from within a situation rather than from a claimed position of objectivity” (Boling, 2010, p. 5). Therefore, a prerequisite for an author to present a rigorous design case is to have been “deeply involved in the design process as a member of the design team (or as a solo designer) and the applicability of any given case to a new design situation will have to be judged by the reader of the case” (Smith, 2010, p. 3).

How it all started

ICT education is a challenging field for every schoolteacher. The first decade of the 21st century was a time of rapid changes, and it was hard for teachers to keep pace. New technologies appeared in the foreground of the ICT classroom (Brailas *et al.*, 2015); the rise of the read/write web shaped what can now be realized as a social media landscape: “Sharing, liking, recommending, creating and curating are simply what people do online these days” (Selwyn and Stirling, 2016, p. 2). Today, the networked generation is always “connected” with a mobile device ever-present in every adolescent’s palm, and “it makes increasingly little sense to distinguish between ‘online’ and ‘offline’” (Selwyn and Stirling, 2016, p. 1). This was the social media “big bang.” The rise of the “networked student” transformed modern school life. Schools may not have changed dramatically, but their students have. What was an interesting learning activity to students only a few years ago is now often experienced as an obsolete and boring task. Therefore, it is quite challenging to be a computer technology teacher today. In today’s moving educational landscape, educators struggle to invent more efficient ways to organize their teaching practice.

In this context, I thought of digital storytelling as an interesting educational project for my class. Storytelling is a universal and archetypal form of meaningful human transaction. It is a way to touch its listeners’ cognitive and emotional sides. It is a narrative practice that can be enhanced and modernized by incorporating digital tools. In fact, this narrative practice has come to be a ubiquitous part of the modern social media landscape, in the form of digital artifacts conveying stories that are shared among teenagers in YouTube videos, short vines, or text-augmented photos. These digital artifacts are experienced online by teenagers around the world who “consume” them alone or in small groups (Boyd, 2014). This worldwide audience occasionally leads to an artifact’s “going viral.”

Today, “one consequence of the digital era has been to confer the tools of media production on the population at large, and the artist formerly known as ‘audience’ has become maker, producer, and creator” (Burn, 2016, p. 314). I thought that this was the right time for my students to become producers of digital multimodal storytelling

artifacts in our classroom; it was time for them to become the tellers and for me to "listen deeply" to their digital stories. This realization was my gambit in this design case.

The story of a design experience is never simple. It is not the story of a linear step-by-step development. Following the inception of the idea for a digital storytelling project, the design experience unfolded in a complex, non-linear way, with multiple overlapping phases of planning and development, trial and error, and inspiration. In this context, a rather distinct phase in the design case was the selection of the appropriate tools to utilize for the implementation of the storytelling activity. Fortunately, there is a plethora of digital tools that can be used for multimodal storytelling. Many commercial, freeware, or open source tools are available as standalone applications or in the form of Software as a Service (SaaS).

Figure 1. Scratch 2.0 used as a digital storytelling platform**.**

The dynamic nature of digital storytelling involves rapidly-changing technological tools (Kearney, 2011). And, unfortunately, there is no map for this territory. It is a territory that is closely interdependent with a social media ecology of web tools, which has been characterized as a "moving landscape" (Boyd, 2014). The digital storyteller becomes a technological explorer, and, as Bateson (1972) has so aptly noted, "an explorer can never know what he is exploring until it has been explored. He carries no Baedeker in his pocket, no guidebook which will tell him which churches he should visit or at which hotels he should stay" (Bateson, 1972, p. xxiv).

During the planning phase of this design case, I experimented with many available tools. I often concluded my experimentations frustrated or overwhelmed. Many tools

required paid subscriptions; these tools were immediately dismissed, as I had no source of funds for the project. Other state-of-the-art software required modern computer equipment that was not available in our school's rather obsolete computer room. Other tools required a substantial learning curve in order to be productive with them. My ICT classes were offered for only two hours per week, which was not enough time to teach my students how to use a complex, sophisticated tool. Finally, after testing many tools, I decided to use Scratch, an educational programming environment developed by MIT (Figure 1).

I selected Scratch for many reasons. One reason was my familiarity with its interface. I had used Scratch in programming classes before, so it would not be necessary for me to spend time learning a new environment in a period of my life that was quite intense and stressful. Another reason was its compatibility with the minimal hardware specifications of the personal computers in our school's computer room. Another critical reason was that Scratch is not solely a dedicated storytelling tool; Scratch is a visual programming environment (Peppler and Kafai, 2007) that can also be used for storytelling. Therefore, I was able to incorporate digital storytelling into my regular programming classes (teaching programming is part of the official curriculum in high schools in Greece).

The big challenge: how to tell students to tell a story?

The next challenge I confronted, after choosing Scratch as the storytelling tool, was how to plan and orchestrate the intervention. The first step, I realized, was that I had to prepare a written outline of the digital storytelling assignment. I would need to communicate the requirements and give detailed directions explaining what the assignment would be and why it would be interesting, setting out all the relative details, explaining what storytelling is and why is good for us to tell stories and listen to the stories of others, explaining…

"Oh, my God," I said to myself. "That's a lot of details, and maybe it's going to be a boring outline for the assignment. And will they even 'get it' in the end?" And then, in a moment of clear thinking, I got this idea: if I want them to use Scratch to create a digital story, why don't I narrate the assignment outline in Scratch myself? Why don't I tell them the story of the assignment, by the very means I am asking them to tell their stories?

From this point onwards, I felt excited. The next weekend I spent two days in front of my computer preparing the digital story of the digital storytelling assignment. By the end of the weekend, I was exhausted but fully satisfied with the result. I couldn't stop

smiling! During these two days, I used Scratch to produce a short video (2.44 minutes) that I would use to communicate the requirements of the assignment in the form of a digital story. I used original photos of the school environment and the computer room as the background images for my story, and I used an animated original Scratch character to stand in for me as the narrator of the assignment. I used text balloons to convey written messages, and I added background music. I edited the background images to add additional effects and to make the overall design more eloquent and attractive. The video was then uploaded to the school's website and shared with my students. This short video is titled *Kalotaxides Istories*, and it can be accessed online at http://vimeo.com/77958459 (Figure 2).

Figure 2. The storytelling of the storytelling assignment as a shared online video.

I used Gimp, an open source image editing software, to create a set of images of the school's computer room, where, in place of the writing board, I put screenshots of the software tools that students were to use in the assignment (as shown in Figure 1). I directed the students to use Gimp for photo-editing their background pictures, Audacity as a sound-editing suite, Scratch as the orchestrating and animation platform, and video streaming sites to share their stories and spread their messages.

The digital storytelling of the digital storytelling assignment was welcomed by the students. They first experienced the digital artifact in their computer room via a data projector. They were positively surprised by to see their everyday school environment "transferred" onto a computer screen. And there was no need to explain what the required deliverable of the assignment should look like—I only needed to say, "Your deliverable should look pretty much like this!"

A week later I produced a second digital storytelling artifact to demonstrate the function of a scene in a plot, inspired by the photos I had taken during a school excursion to our city center. I gave this story the title, *Scratch goes Monastiraki*, and it can be accessed at https://vimeo.com/78580037. Students were surprised for a second time, realizing that a usual school excursion can provide the source material for a digital storytelling artifact. In the weeks that followed, the students proved to be quite creative themselves, and they produced numerous interesting and competent digital stories.

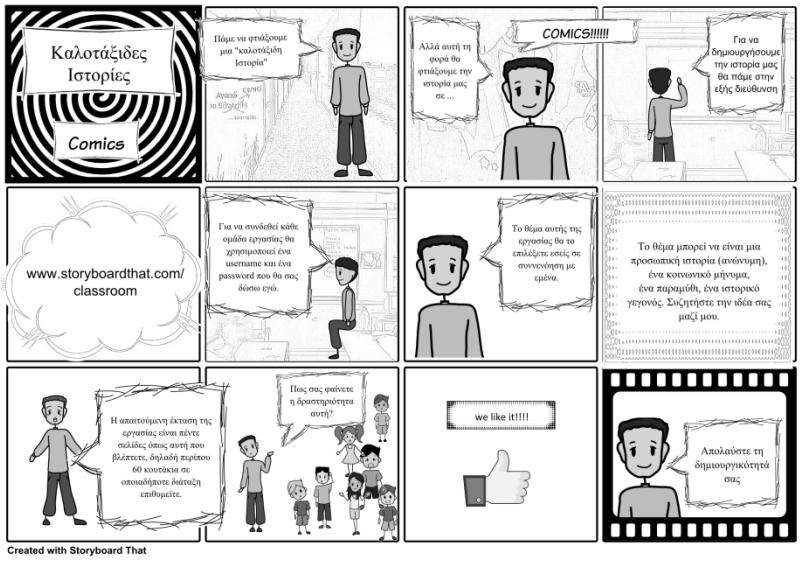

Figure 3. Digital storytelling of the storytelling assignment in comics.

The comicstrip version of the story

At the conclusion of the digital storytelling assignment in Scratch, I designed a follow-up intervention using a digital comicstrip tool. The comicstrip is a popular medium used to express stories through a sequence of images that are supplemented with text balloons. “Comics can be described both as a type of medium and as a vehicle for storytelling” (Kukkonen, 2011, p. 34). Therefore, comicstrips are quite often used in education as instructional medium (Herbst *et al.*, 2011; Thomas, 2012) or as a digital storytelling tool (Schäfer, Valle and Prinz, 2004; Montgomery *et al.*, 2012). Comics are considered to be complex, multimodal artifacts (Jacobs, 2007; Kukkonen, 2011). Today, there are many available comicstrip applications that allow end users to produce professional-looking comicstrips without being graphic artists themselves. These applications allow users to set the comicstrip background by inserting their own images or by selecting predefined patterns from an available palette, and to then drag and drop characters onto the backgrounds. Comicstrip sequences carry different medium affordances (Kukkonen, 2011) as compared to the

animated video clips that can be produced using Scratch. I thought a comicstrip follow-up to the Scratch storytelling intervention would be an interesting experience and a way to compare the two mediums.

Among the many available online comicstrip tools offered as SaaS (Software as a Service) today, I chose *StoryboardThat* (http://storyboardthat.com), because of its simple interface. It was not necessary to learn the interface, and there was no learning curve. Students could be productive immediately and create professional looking comicstrips in minutes. Although *StoryboardThat* is a paid commercial service (if you wish to have access to the convenient premium features), but it has an affordable educational subscription rate, and it offers a convenient teacher's dashboard to monitor students' activity. Once again, I decided to present the assignment as a digital story, this time in comicstrip form. The result of my effort is shown in Figure 3.

Figure 4. The school teacher as the narrator character in a comic.

In the comicstrip version of the storytelling assignment, I also used many actual school photos to set the background images, and again I edited these images in Gimp—this time to give them more of a comicstrip "feeling" by applying a comic photo filter. A main comic character was used to represent the teacher in the role of the assignment's narrator (Figure 4) who set the context of the assignment and explained the requirements. Surprisingly, my students' reception of the comicstrip assignment was not as enthusiastic as their reception of Scratch's animated video had been. I cannot say if this was due to the different affordances of the comicstrip medium itself, or due to the fact that storytelling my assignment for a second time was not a surprise anymore. I don't know what the students' reactions would have been if the order of the interventions had been swapped. The comicstrip version of the digital storytelling assignment was, however, just as effective as the video version in conveying its message. There was no need for additional explanation of what the deliverable should look like, other than to say, "My dear students, the required deliverable is a digital story in the form of a comicstrip like this!" Once again, in the

weeks that followed, students produced creative digital storytelling artifacts, this time in the form of comicstrips.

Discussion

Human action is mediated by the available tools provided by the cultural context. The literate mind owns different qualities in comparison to the oral mind (Ong, 2002). As our culture is transformed by the evolution of digital life, adolescents' behaviors are shaped by the evolution of the cultural tools that are made available to them (Brailas and Tsekeris, 2014). Narrative and digital media are considered to be cultural tools: "The power of expression is a basic element of human development. The way we express ourselves, through whatever medium available, is one of the key elements in how human beings have evolved since our ancestors started their quest for survival" (Erstad and Wertsch, 2008, p. 21). Digital networked tools imbue modern multimodal storytelling artifacts with new qualities. Clifford Geertz (1973) has eloquently phrased the importance of storytelling: "man is an animal suspended in webs of significance he himself has spun" (Geertz, 1973, p. 5). And Bruner (1996) has noted that, "It is through our own narratives that we principally construct a version of ourselves in the world, and it is through its narrative that a culture provides models of identity and agency to its members" (Bruner, 1996, p. xiv). According to Bruner, the appreciation of the centrality of narrative comes from the confluence of many disciplines. Understanding the meaning of a story requires situating the story into a specific cultural context, into a whole that determines its constituent parts while is being determined by them: "the meaning of a part depends upon a hypothesis about the meanings of the whole, whose meaning in turn is based upon one's judgment of meanings of the parts that compose it" (Bruner, 1996, p. 6).

Narratives can be seen as cultural contexts that we all relate to and use to give meaning to our everyday activities: "schools and classrooms are social worlds that should be characterized by the same sharing of experiences…that enrich our everyday lives as we engage in the relationships and situations that we encounter in the larger society" (Doecke, 2015, p. 154). Mediated narrative action always takes place in a specific context and is characterized by an irreducible tension between the narrator and the mediational tools (Erstad and Wertsch, 2008).

The context of an assignment along with its delivery mode and its interpretation constitutes a whole, an irreducible coevolving complex system, as Kauffman (1996) has termed it, whose parts are connected through relations of reciprocal causality. According to this interpretation, the delivery of an assignment should be treated as an integral part of that assignment.

In this design case, the catalytic decision to provide the assignment outline in a format isomorphic to that of the required deliverable, either as an animated video produced by Scratch or as a comicstrip, facilitated students' immediate understanding of what they were being asked to do. Students knew from the very beginning of the intervention what a digital storytelling artifact should look like, by experiencing the teacher's assignment artifact. Another advantage of this approach was that by storytelling the assignment I became sufficiently familiarized with the technological tools and their peculiarities before asking my students to use them.

The design decision to incorporate real photos of the school environment into the digital narration (Figure 5) rendered the story more vivid, and attracted students' interest. It also was an efficient way for me to communicate the value of taking their own photos in order to incorporate them into their digital stories. Many of the students' stories included photos of their own neighborhoods.

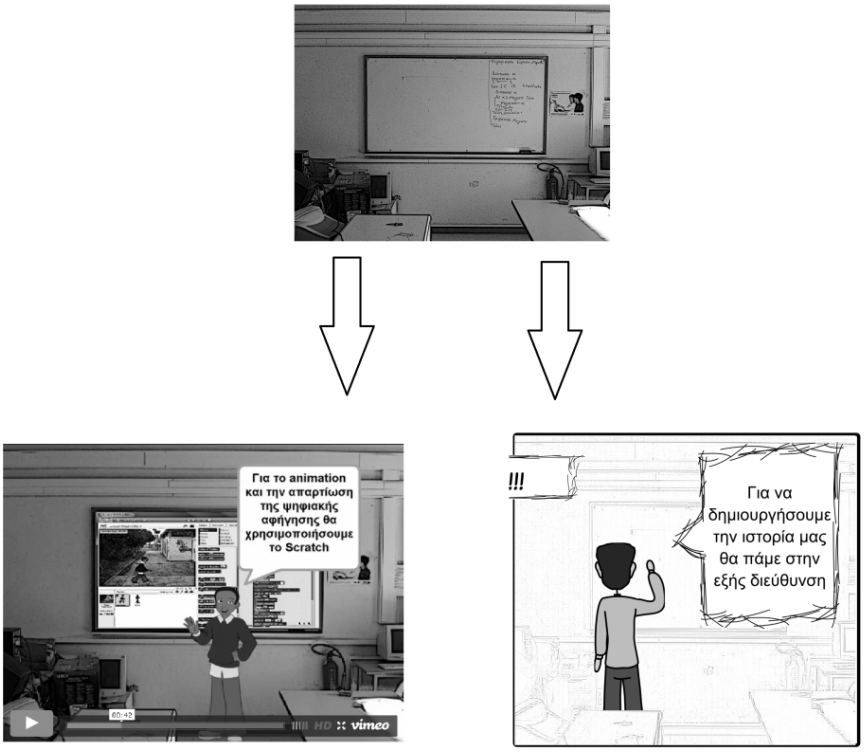

Figure 5. Real photos of the school environment were incorporated into both digital artifacts.

Conclusion

In conclusion, it is important to highlight some of the limitations of this paper. First, the auto-ethnographic and self-reflective orientation of a design case study limits the ability to generalize, and its interpretation is very reliant upon author's personal views, as Elliott (Elliott, 2013) has pointed out: "Individual pieces of classroom research by teachers carried out in isolation from their peers might be judged to lack the necessary rigour." (para. 2). A more comprehensive qualitative or quantitative analysis of cases of isomorphic assignment delivery is needed to further investigate the effectiveness and applicability of such an approach, and especially in the field of digital storytelling in education. Also noticeably absent from this analysis is an account of the actual student learning outcomes. Although such an account would be crucial in other forms of research, it should be emphasized that such an account was not the aim of this project.

Notwithstanding these limitations, this paper makes an important contribution by offering a richly situated exploratory investigation of a special storytelling practice. How can one effectively tell students to tell a story? The suggestion made in this paper is that storytelling the storytelling assignment could be a quite promising teaching technique, and its effectiveness needs to be supported by further research.

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