This practice-led research paper explores how the Digital Storytelling (DS) process, inspired by museum objects, can make information come emotionally alive and engage participants in active and deep learning in both formal and informal settings. A researcher from Loughborough University’s School of the Arts, English, and Drama and an educator from the Smithsonian Center for Learning and Digital Access collaborated to engage community groups in DS workshops using a digital platform, Smithsonian Learning Lab, which offers access to museum resources and enables the creation and adaptation of learning materials with those resources. Results of a series of DS programmes conducted in spring 2018 indicate how the DS five-step method as adapted and integrated into the platform supports 21st-century skills (the 4 C’s of Creativity, Critical thinking, Collaboration, Communication), and the effect of this approach on both individual participants and their communities.

1. INTRODUCTION

“The digital storytelling process helps us transform isolated facts into illuminated, enduring understandings” (Porter 2015). This research investigates how “storying” a cultural heritage topic (namely creating digital stories inspired by museum objects from the Smithsonian collections) can represent a way of making information come emotionally alive in a learning process aimed at improving 21st-century skills.

Founded in 1846, the Smithsonian is the world's largest museum, education, and research complex, including 19 museums and galleries, the National Zoological Park, and nine research facilities. The Smithsonian Center for Learning and Digital Access (SCLDA) is the Smithsonian’s central education office, offering learning experiences and resources across disciplines, and for learners in both formal and informal settings. SCLDA’s outreach encompasses the digital arena, which enables educators and learners to connect with museums and research centres through the Smithsonian Learning Lab (https://learninglab.si.edu/), an online platform that facilitates access to millions of Smithsonian resources, which include images, recordings, texts, websites, and more.

Collaborating with the Smithsonian offered a unique opportunity to test, both face-to-face and virtually, the effectiveness of digital storytelling to enhance the 4Cs (Creativity, Critical thinking, Collaboration, Communication) in both formal and informal learning. The researchers had access to the Smithsonian digital collections within the context of SCLDA’s ongoing development of new heritage-related learning resources, and involvement in public engagement programmes that support different types of learning.

This paper will explore in particular the integration of the Digital Storytelling (DS) methodology into the Smithsonian Learning Lab; the adaptation of the five-step DS process during pilot workshops; the impact of the DS approach on participants; and the potential of integrating this methodology into online learning resources and for community engagement.
All of the pilot programmes took place in spring 2018 in the Washington, D.C., area, with multiple audiences: secondary school educators, and pairs of parents and their middle-school children. These audiences came from SCLDA’s ongoing public engagement programmes: a professional development series for community college educators (Montgomery College-Smithsonian Fellowships, in suburban Maryland) and, and a community literacy programme (Fairfax County Public Schools Family Literacy Program, in suburban Virginia). The pilot programmes were designed and developed by the researchers in collaboration with educators in several museums and partner organisations together with DS experts, and were presented in both formal and informal learning settings.

Workshop participants engaged in a self-reflective process whose goals were to understand if and how Digital Storytelling can enhance the 4Cs; to identify which step/s of the creative process has/have had an impact on a particular skill; and to highlight any moments in which their emotional responses and feelings supported the learning process. The researchers also intend to recognise any limitations and challenges of the DS methodology when applied to explore how individuals connect personal memories to museum objects.

1.2 The Smithsonian as Research Partner

The Smithsonian Institution's strategic plan (2018-22) presents a vision of engaging and inspiring “more people where they are, with greater impact, while catalyzing critical conversation on issues affecting our nation and the world.” This strategy includes addressing complex challenges, understanding and having impact on 21st-century audiences, and reaching ever larger audiences through a digital-first strategy.

The Smithsonian Center for Learning and Digital Access, the central education office of the world's largest museum, education, and research complex, develops models and methods for digital learning through practice, research, and evaluation. In 2016, SCLDA launched the Learning Lab (learninglab.si.edu), a digital platform that enables broad access to and creative use of Smithsonian digital resources in art and culture, history and the sciences. The Learning Lab digital platform enables teachers and learners to discover and use the Smithsonian’s rich educational resources – millions of objects, artworks, articles, videos, lesson plans, and more – by building them into “collections” for use with students.

The Learning Lab includes flexible tools for working with resources in several ways. Users can upload images and text (for example, a teacher’s worksheet or student work), as well as resources and links from other museums, websites, and significant digital repositories such as the U.S. Library of Congress. Here are just a few of the functions users may use:

- add “hotspots” to highlight areas of interest on an image
- upload discussion or quiz questions to support deeper analysis of an object or topic
- use a sorting tool to order or categorize resources on a spectrum or timeline
- use a citation tool for uploaded resources in order to support good academic practice and digital citizenship.

From a broader perspective, the Learning Lab allows teachers to build upon the collective knowledge of the group by copying and adapting for their own students' collections that another user (whether teacher, student, museum educator, or lifelong learner) has created, without losing the trail back to the original creator.

As the Lab matures and thousands of collections have been published in it, SCLDA educators are engaging with educators across the globe, not only to share with them the Lab’s functions and uses,
but also to explore the ways in which the Learning Lab can support both formal and informal learning. Working together with the School of the Arts, English, and Drama at Loughborough University to use the Learning Lab for digital storytelling opens up a new methodology with broad appeal to educators from all content areas in both formal and informal learning environments, as they look for ways to build critical skills using digital media. In addition, by developing and then sharing the digital stories of participants (only with their permission) online through the Learning Lab and at public heritage-related events, we address the Smithsonian’s responsibility to present a full, nuanced view of the contemporary world, while empowering and giving voice to those less often heard (Lowenthal 2009).

2. OUR STARTING POINTS - FRAMING THE RESEARCH QUESTIONS TOGETHER

The opportunity to experiment with Digital Storytelling within the Smithsonian Learning Lab arose from an Arts and Humanities Research Council - AHRC fund that gives U.K. - based researchers the chance to spend a period abroad in one of the five institutions involved in this International Placement Scheme. “Storying the Cultural Heritage: Digital Storytelling as a Tool to Enhance the 4Cs in Formal and Informal Learning” was one of the five research projects funded in 2017 and was the only practice-led among them. Its concept emerged from previous reflections about ‘the value of personal truth’ (Rappoport 2014) between the two researchers who developed the project proposal and evolved as a collective journey that involved diverse target audiences to explore the emotional impact of storytelling in a learning process aimed at enhancing active and deep learning. Moreover, as with any journey, it required a shared attitude to openness and the desire to be surprised by something not originally anticipated.

The research questions that drove researchers and participants (they also were involved at an early stage to help frame and design the research process) focused on:

- How can “storying” cultural heritage represent a way of making information come emotionally alive in a learning process aimed at improving 21st-century skills?
- How can digital storytelling enhance the 4Cs (Creativity, Critical thinking, Collaboration, Communication) in formal and informal learning?
- How can the Digital Storytelling (DS) process become a teaching strategy in the Smithsonian Learning Lab?

3. WHAT WE DID WITH MULTIPLE AUDIENCES

The “Storying the Cultural Heritage” pilot aspired to challenge DS as a method by emphasising the importance of co-designing the process itself with participants, and by moving from the five-step process (briefing/story-circle, story-writing, audio editing, video editing, screening/sharing) to a context-tailored approach.

Multiple audiences were engaged not only to evaluate potential diverse impacts on different stakeholders, but mainly to co-design the workshop itself in a way that would identify specific needs and objectives and maximize participation. In particular, because incorporating DS in the Smithsonian Learning Lab as a teaching strategy for both formal and informal learning was planned, participants’ engagement at an early stage of the research process was essential to understand how to balance the digital component with the human touch in a way that would facilitate deep and active learning.

After a few warm-up activities run in collaboration with the Smithsonian National Portrait Gallery and the Oyster-Adams Bilingual Middle School in Washington, D.C., to test ways in which to cross multiple barriers and challenges (emotional, linguistic, cultural) and also how to structure the workshop when working with large groups, the two main activities were developed and carried out:
the first, in chronological order, was a workshop entitled “Pertenecer: Using Museum Objects to Prompt Stories and Explore Sense of Place and Belonging” to try out the approach in an informal, multigenerational education setting; the second was “Explore Teaching with Digital Storytelling: An Interdisciplinary Workshop” with participants who wanted to experiment with DS and the Learning Lab in formal education.

3.1 “Pertenecer: Using Museum Objects to Prompt Stories and Explore a Sense of Place and Belonging”

The theme, structure, and aims of the workshop “Pertenecer” were identified and co-designed with educators Micheline Lavalle and Florencia Lavalle from the Fairfax County Public Schools’ Family Literacy Program, Beth Evans of the Youth and Family Programs division of the Smithsonian’s National Portrait Gallery, and Elizabeth Scotto-Lavino of George Mason University in Virginia.

“Pertenecer” was offered as an extension of the Family Literacy Program, an ongoing collaboration between the Smithsonian Institution and Fairfax County Public Schools that promotes English Literacy and supports learning for the whole family. The primary target audience of this programme is immigrants in Fairfax County, Virginia (United States). Some immigrants are recent, others have lived in the United States for a long time, but all are in the programme to learn English and develop advocacy and leadership skills. Few families in this programme have had exposure to the arts, given that they came from low-income families in rural areas, and lack formal education.

During the three-day workshop (3 hours a day), facilitators adapted the five-step Digital Storytelling process to encourage active intergenerational dialogue, overcome language and digital barriers, enhance participants’ learning, and explore how to integrate the use of artifacts as prompts for the storytelling process.

The researchers made and published online a Learning Lab collection (http://learninglab.si.edu/q/llc/0dpY76mxRzzGdVRe) that gave participants access to information, prompts, and materials (in both Spanish and English) before the workshop, and served as a visual, collections-based guide during the three days. It was also the space where participants had a chance to upload their digital story and see their “object” become part of a Smithsonian online collection. During the workshop we gave everybody access to the Learning Lab not only to make participants aware of the specific activity that we were running and the available tools linked to each stage of the storytelling process, but also to show them how to search on the Smithsonian digital platform for images that could be useful in editing their video.

To blur the boundaries between digital and un-digital the researchers tried different approaches, so that the digital component attracted the younger participants but was not a barrier for their parents and grandparents. On the first day (scheduled for the briefing and the story-circle), presenters printed out the images of the paintings and sculptures included in the Learning Lab collection to prompt stories on “pertenecer/sense of belonging” and the “flow of ideas and thinking aloud” (Sadik, 2008). Using these artifacts rather than personal objects to facilitate discussions within the group, researchers asked participants to stand next to the image that was the most meaningful from a personal perspective. Then participants explained why it was meaningful by recounting the memories evoked by that object. This was essentially the stage of the DS process that offers “a way of building group rapport through emotional exchange and sharing ideas” (Coleborne & Bliss, 2011). All of the images were of artifacts presented in the exhibition The Sweat of Their Face at the National Portrait Gallery, which the participants visited during the second workshop day.
In the Smithsonian Learning Lab all the images have metadata that includes such information as title, provenance, date, and sometimes historical or artistic context (much like the accompanying contextual information given in exhibition labels in a museum). This information was not given to the participants so that they would reflect instead on their personal and emotional connections with these artifacts, without consideration of the museum’s interpretation. The idea behind this choice was to move from a cognitive approach to museum objects to an emotional one, where the priority was for each participant to empathise with the object’s story.

As Beth Evans notes, in this way “participants were connecting portraits with their own lives,” so when they visited the museum the following day to discuss the exhibition with the museum educator, they didn’t feel intimidated by “a lack of knowledge” because they already had their connection with the object.

Choosing a specific exhibition that highlights the importance and the role in society of everyday people also facilitated participants’ engagement, especially for this target group. People generally perceive portraits as a sign of power, and visitors may believe that they are supposed to know the stories of the people in power. For this reason, if visitors do not know their stories or do not recognize the person represented in the portrait, they may somehow perceive in themselves a lack of knowledge.

However, as suggested by Beth Evans, “Digital Storytelling revealed itself to be such a natural fit for the National Portrait Gallery because they [DS and portraits] both unlock personal narratives and the uniqueness of each story.”
Figure 2: Group selfie at the end of the visit to the Smithsonian National Portrait Gallery.

After they visited and talked about the exhibition (in particular how the stories behind the museum objects could inform their own narratives), participants had a preview of the video editing software that would be used on the third and final day. Researchers playfully delivered this tutorial, involving one young Spanish speaker participant who was trained in advance on how to use WeVideo, in a sort of quiz on the secrets of video editing. A facilitator asked questions in English, and the participant with experience in video editing answered in Spanish while showing on a screen the main features of the software.

Day three focused on the production of the stories and was facilitated in a way that could support intergenerational dialogue within each family group. As Micheline Lavalle summarised, “Digital Storytelling helped participants to bridge three intergenerational gaps: the technology gap, the language gap and the ‘teen’ gap. Very few of these families have access to technology, but the children do, so the gap widens. And not only the language gap widens, because parents do not speak English, but also the technology gap widens; and the teens’ gap, as children in their teens do not want to talk to their parents.” By facilitating discussions around the artifacts (via the Learning Lab collection and at the museum) and supporting collaboration during the production of the digital stories, the workshop helped participants identify these gaps (which are sometimes hidden or tacit) and use the “tools” given them through the DS process to reduce those barriers.

A testimony of this fruitful collaboration within family groups are two digital stories in particular, one in English, “Pertenecer: My Life Story,” made by Marisa; the other in Spanish, “Recuerdos de Guatemala,” made by Marisa’s grandmother, Olga. Marisa and Olga speak both languages fluently, but they decided to write the script and record the voiceover in the language that they felt to be closer to the theme and feelings they were exploring, even though when they shared orally for the first time the story within their family group, they both spoke in English. This was the first time that both Marisa, a teenager, and Olga, in her 70s, edited a video, but while working side by side, facilitators perceived no technical barriers. The main focus for both of them was supporting each other to express the meaning of “pertenecer/belonging” from their perspective in a way that nourished their mutual understanding about the personal challenges they encountered when they moved from one country to another, each at different stages of their lives.
“It's very moving for me to see how important the workshop was to them individually and how the group came together to form a group culture,” commented Micheline Lavalle. “Even if it was only three days, only three hours per day, you felt at the end that they were all connected somehow by sharing the experience and listening to each other's stories. The communication between the (grand)parent and the child was the most beautiful aspect. It is an experience they won’t forget.”
“Pertenecer” was a pilot activity at Fairfax County Public Schools; feedback from both educators and participants suggests it will not be an isolated opportunity. “They keep asking when is the next one,” said Micheline Lavalle, “so we are ready to go. I would love to give my students a chance to tell their stories as part of their ESOL program because our approach is not about teaching English, but it is about connecting learners to a culture.” Also, as “Pertenecer” has already shown, personal stories reveal a sense of belonging as a universal need: not only belonging where we are, but also carrying that belonging from the past, through culture, language, and ethnicity.

The effectiveness of using museum objects as a prompt for storytelling was also relevant as a means of validation. Florencia Lavalle, a young artist and bilingual educator noted: “Participants were fully engaged in the project because they were exploring the concept of ‘pertenecer’ throughout the process also during the visit to the museum, and they were making their video in that context . . . They felt that connection in a deeper way. It was not only about making their personal stories but also about hearing other stories and making clear that we are all part of culture.” This sense of belonging was also supported by their understanding that their video would be “displayed” in the Smithsonian Learning Lab collection together with the artifacts that initiated the whole process.

3.2 “Explore Teaching with Digital Storytelling: An Interdisciplinary Workshop”

“Explore Teaching with Digital Storytelling” was a hands-on interdisciplinary workshop organised by the Paul Peck Humanities Institute at Montgomery College and the Smithsonian Center for Learning and Digital Access, designed for faculty in all disciplines, as well as other staff members and librarians. Montgomery College students’ ages range from 18 into the 70s. Some faculty and staff members had already had DS training sessions, but none had ever applied the methodology in their teaching or for any other professional use.

When Sara Bachman Ducey, professor of nutrition and food, college-wide chair of integrative studies, and director of the Paul Peck Humanities Institute, invited the college staff to participate in this workshop, she was overwhelmed by requests from people wanting to attend, even though it was held during their vacation period when they were off campus. The main attractors included the following:

- the workshop was organised with the Smithsonian Institution, which has been running a prestigious Fellowship Program with Montgomery College for more than 20 years;
- it was facilitated by an academic coming from a different discipline and potentially bringing a new approach;
- it was oriented for direct application in their teaching;
- it was multidisciplinary and gave staff members an opportunity to share experiences with colleagues whom they seldom meet.

They also appreciated being consulted regarding the length of the workshop and the needs to be addressed. In response to participants’ requests, researchers designed two separate five-hour sessions at the school’s Rockville campus, with two groups in two consecutive days, totalling 55 participants over the two sessions. A third workshop took place at the Smithsonian Center for Learning and Digital Access in Washington, D.C., for students as well as faculty members who had not yet completed their stories. It was a stimulating challenge to have to deliver such a short DS workshop, during which researchers still wanted to test how to integrate museum objects to prompt the storytelling process and include the DS method in the Learning Lab as a teaching strategy. This challenge provided the opportunity for the researchers to reflect more on how to develop a Learning Lab collection (http://learninglab.si.edu/q/ll-c/XbHKgkU3zdYe0RpB) in which participants could find supporting materials to help them grasp the meaning and aims of the DS process within this specific context.
None of the faculty members interviewed after the workshop identified the lack of time as an issue. For the majority of them, having the link to the Learning Lab collection in advance was not only helpful to optimise their workshop time, but it also represented an implicit way to understand how to use the Learning Lab for their teaching and how to replicate a similar experience with their students.

Regarding workshop facilitation, participants greatly appreciated that the workshop was organised but not too structured so that they had the opportunity to share thoughts and reflections with the facilitators and the other colleagues who came from a variety of disciplinary backgrounds. In particular, they perceived that the production of the video *per se* was not the priority. Instead, the primary focus of the workshop (facilitated as a “meta-workshop,” during which actions were both performed and analysed) was not on the making process. Rather, the focus was on the deep exploration of DS as tool to transform their students from “knowledge consumers” to “knowledge producers,” using the Learning Lab as a “safe digital space” in which to find authentic and reliable information, whilst freeing their own creativity by making “surprising products” (Simonton, 2012).

A few participants included images from the Smithsonian Learning Lab in their digital stories and used them for a variety of reasons: from the most obvious lack of personal images to the well-planned intention of showing their students possible and unexpected ways of using these resources.

In the following examples, both storytellers used museum objects in the video-editing phase: in the first case, “The Capitulation of Granada,” Eddy Arana, a professor of Spanish and German, approached artifacts from a cognitive angle to emphasise the understanding of the contents represented; in the second case, “The Boots. Thoughts from the Waiting Room,” Kate Snyder, a professor in the nursing program, used Learning Lab images to reduce (perhaps unconsciously) the emotional intensity of a personal story that was produced for a didactic purpose, after having experienced some challenges during the voice-recording process.
“Using the Learning Lab,” explained Eddy Arana at the end of the DS workshop, “needs a very specific approach, knowledge of resources that can be incorporated in a story. As a teacher, I find it helpful to show what a museum can offer and help students use artifacts creatively, rather than being a passive consumer. Also, it is appealing to our natural sense and ability to communicate and receive (visual) messages.”

Another faculty member recognised that “there is a lot of ego in teaching, and students need to feel empowered to make their learning more satisfying. The most important thing that DS demonstrated,” he said, “was that students can leave with something they created and not something that everybody made in the same way. And for their learning process, it is so important to have something so unique.”
4. WHAT WE LEARNED

Four months at the Smithsonian Center for Learning and Digital Access gave one researcher the opportunity to rethink and challenge Digital Storytelling as a practice and explore the potential of using this method to enhance 21st-century skills. In particular, our incorporating Digital Storytelling as a teaching strategy in the Learning Lab supported a new workshop structure, one designed to facilitate effective intergenerational dialogue, overcome language and digital barriers, and enhance participants’ learning.

This project demonstrated an ideal fit to marry the use of the Learning Lab with DS, especially for object-based learning. In addition, the collections produced for the two workshops offer models to support replication.

For the general public involved in informal learning, applying DS in the Learning Lab was very rewarding because they had the perception of being knowledge producers, as if their intellectual production was as meaningful as an artifact in the museum. Seeing their digital story uploaded in the same place gave validation to the participants who could share their product through the web link, and it also enabled creativity since the Learning Lab collection can now be copied and adapted by other users. For the participants involved in formal learning, the combined use of the Learning Lab and DS during the training process effectively modelled the use of the Learning Lab and represented a new entree for digital users to the platform itself.

From a DS and workshop facilitation perspective, the main takeaways are that:

- co-designing the structure and aims of the workshop is essential especially when learning and social interaction are paramount to the experience and the process;
- facilitating a meta-workshop with educators involved in formal learning represented an enriching process for all the people involved (including the facilitators), and dismantled those potential barriers that teachers can build up when they assume the role of learners;
- removing the focus on the production of the stories and emphasising the importance of the process can appear controversial, but it enhances learning outcomes: even if the screening session did not include all the videos produced by the participants, or even if it involved only the sharing of some draft edits, the process did not lose its effectiveness. Further, the sharing phase was extended online as participants continued to complete and submit their digital stories after the end of the workshop for inclusion in the online Learning Lab collection.

Reflecting from a 21st-century learning perspective, this research project exemplifies how using both DS and the Learning Lab together unlocks creativity and demystifies the use of cultural artifacts for teaching. It also shows how the combination of the two increases accessibility in different ways for different stakeholders. Regarding the 4Cs (Creativity, Critical thinking, Communication, and Collaboration) researchers learned that these skills are often combined, and it is difficult to separate them. Skills are developed through different stages of the DS process, and the primary challenge – still to be explored in future research – is how to assess these skills through DS. The majority of the educators involved in this project acknowledged that “Creat-tical thinking” (meaning a combination of Creativity and Critical thinking) is the essential skill to be enhanced in the younger generation, to help them cope with complexity and change in today’s digital world (Trilling & Fadel 2009). As a remedy to this lack of abilities and dispositions in identifying, understanding, and creating multiple perspectives, this research suggests bringing multiple voices to the fore and using storytelling as a way to do so.
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