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Digital Storytelling in Teacher Professional Development

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Published in:
Proceedings of the 17th European Conference on e-Learning

Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record
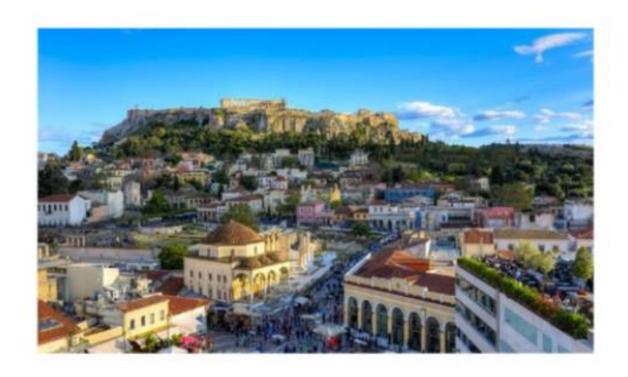
Link to publication from Aalborg University

Proceedings of the
17th European Conference on e-Learning
Co-hosted by the
University of West Attica, Greece
and Hellenic Air Force Academy (HAFA)
1-2 November 2018

Edited by
Prof. Klimis Ntalianis
Prof. Antonios Andreatos
Prof. Cleo Sgouropoulou

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A conference managed by ACPI, UK

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Digital Storytelling in Teacher Professional Development

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Abstract: This paper explores, through a pilot study, the potentials and pitfalls of using digital storytelling-inspired approaches combined with investigative sketching processes in teacher professional development (TPD) and in-service teacher training, focusing on an individual sense of agency and collegial collaboration. Seen in a broader perspective of societal developments, TPD is increasingly imperative, as teachers have to navigate through extended inclusion of students with special needs, digital literacy, and multicultural classrooms; and as more teachers are entering the profession through alternative pathways, without having the initial teacher education, TPD is increasingly seen as a process of lifelong learning (OECD, 2009 & 2014). The research in this article originates from a small segment of a large longitudinal research project on online teacher professional development (oTPD) for science teachers in Danish elementary schools. Data in this pilot study derive from a two-day workshop, conducted with two science teachers, aiming to 1) facilitate an investigative process for the participants where they, through video productions and personal digital storytelling, could explore, identify challenges and develop their teaching practice, and 2) use the productions as empirical data in the larger research project. Adaptations of digital storytelling developed by www.storycenter.org were applied in the workshop in combination with investigative sketching processes. The analysis in this research documents progress in the teachers' sense of agency and action competence, as well as progress in the teachers' motivation for continuous collegial professional collaboration. Though the experience was of increased sense of agency (also when revisited after one year), the question remains whether the teachers actually had the capability to act in their teaching practice and organisation. The structures of school contexts in general may be such that even though the teachers have identified possible actions and how they would like things to be, few changes are actually obtainable without actionable management support. The pilot study in this article involves a very limited number of teachers; nevertheless, the analysis points out interesting potentials which motivate a follow-up study in these approaches in TPD and in-service teacher training.

Keywords: digital storytelling, teacher training, teacher professional development, reflection, video sketching and narratives

1. Introduction

Teacher professional development is increasingly imperative, as teachers have to navigate increased inclusion of students with special needs, increased focus on digital literacies, and multicultural classrooms; and as more teachers are entering the profession through alternative pathways and not having the initial teacher education, teacher training is increasingly seen as a process of lifelong learning (OECD, 2009 & 2014).

The research in this paper stems from a small segment of a larger research project on online teacher professional development (oTPD) for science teachers in Danish elementary schools. The TPD focus on active participation is related to the teachers' everyday practice and reflection with peers and, through this, enhances the transfer to the practice dimension (Wahlgren, 2009). This larger project was a design-based research project (Amiel & Reeves, 2008) ending in 2017, which included a 3½-year data-gathering process including quantitative and qualitative data. As a part of the qualitative data, a two-day workshop was conducted with two science teachers from an elementary school in Denmark. It is this workshop that constitutes the empirical foundation of this research paper. The workshop involved two methods as possible catalysts for teacher professional development: 1) digital storytelling, based on the model developed by www.storycenter.org (Lambert, 2013), and 2) sketching processes inspired by Systematic Inventive Thinking (SIT) (Barak & Albert, 2017) and video-sketching (Ørngreen et al, 2017).

The research aim of the workshop was to use video productions and personal digital storytelling as A) data collection in relation to the larger research project, and B) a catalyst to professional reflection, agency and teacher professional development.

2. Theoretical framework and practitioners' documented experiences

The process of producing short personal digital videos in collaborative sessions as a means for understanding something new or disseminating something important from that person's life is particularly seen in the *digital storytelling* (DS) method. In DS workshops, the participants are facilitated individually and collaboratively

through specific phases in which they develop and share personal and authentic stories. The stories have a narrative structure using multiple modalities within digital media, e.g. text, still and moving images, voice, music, animation etc. (Lambert, 2013).

In a broader perspective, the use of storytelling within organisations as an instrument for organisational change has been acknowledged in various studies (Boje, 2006), indicating potentials of trust-building, transfer of knowledge, generating emotional connections and mending relationships. The sharpening of one's story-listening skills can translate into a more accurate map of collective understanding among the organisational players (Boje, 2006; Luwisch, 2001; Estola et al, 2014; Sole & Wilson, 2002). Pitfalls are also identified, e.g. if the complexity of the storywork and the in-situ context are overlooked, if the presumption of uncovering tacit knowledge through storytelling is overestimated, or if resistance stories are rejected (Boje, 2006). In "narrative therapy" within psychiatry, the potentials are seen in the externalising of personal stories and the possibility of investigation from a 'distance', which can uncover alternative understandings and actions, and repair trust (White, 2006).

The DS method originated in the US in the 1990s, focusing on the possibilities of the new media in relation to storywork. The method "supports individuals and organisations in using storytelling and participatory media for reflection, education, and social change" (Storycenter, 2018), and has gained international attention, where some researchers and practitioners focus on giving marginalised groups a voice in society, others on developing one's professional identity and supporting relational engagement (Hull & Katz, 2006; Hardy & Summer, 2014; Haug et al, 2012). In addition, various research studies point out potentials for development of collaborative skills, mastery of multimodal digital technology, self-knowledge, self-representation, learning and reflection (Alterio, 2002; Barrett, 2006; Haug et al, 2012; Jamissen et al, 2017).

The DS method consists of different entangled dimensions. The original method, as it is taught to trainers through certification workshops, consists of several steps which, over time, have permuted into a number of versions. Table 1 shows three approaches that emphasise the processual perspectives, but with various connotations and concepts applied. First are shown the seven steps from the online Digital Storytelling Cookbook (originally by Lambert in 2010, and then edited in Lambert, Zalabakova & Steen, 2014, which we use here). The cookbook does not refer to social activities of collaboration and support for the reflection process; for example, it does not mention the story circle, which is normally seen as a strength of the method. Instead the focus seems to be on enabling individuals to create their own stories, though keeping the process perspective by stating that the storytelling process is a journey (Lambert, Zalabakova & Steen, 2014). In the middle is a model by Samantha Morra (2013) as a method to be used with students in class, and the text is primarily written to teachers. Again, this does not include collaborative elements while in the story creation process, but does introduce feedback after sharing the digital story, which is argued as an important element in learning processes, as well as a focus on continuation, as the figure itself is drawn as a circle. The text does not elaborate on this, but it could be understood as either returning to one's story or improving the next story. Finally, steps are shown from an online handbook on transformative storytelling for social change (Transformativestory, 2018). The organisation behind the handbook illustrates three ways of working with digital stories, in a continuum from the personal storytelling in the DS process to collective storytelling via a participatory video process (where the story and the digital video are co-produced). Thus, this approach emphasises the social, as for example the previously-mentioned story circle.

Table 1: Overview of various DS approaches

STEP 1: What do you want to tell? In the very beginning, you need to find out and clarify what your story is about.
STEP 2: Add your emotions. Once you identify the emotions in your story, you can decide which emotions you would like to include in your story and how you would like to convey them to your audience.
STEP 3: Find the moment of change. You have found and clarified the insight and emotions of your story. You became clear about meaning of your story. The next step is to tell your story by identifying a single moment so you can illustrate your insight.
STEP 4: Make your story visible. You already know your story and the emotions you want to show, and you have found the moment of change in your story. Now you need to work on the visual component of the story to bring it to life for your audience.
STEP 5: Add sound.
STEP 6: Assemble your story! At this point in the process, you have found and clarified what your story is about and how it sits with you today. You have also established the overall tone you want to convey. You've identified a moment of

change and begun making choices about how to use visuals and sound to bring the story and scenes to life for your audience. Now you are ready to assemble your story by spreading out your notes and images and composing your script and storyboard.
STEP 7: Show your story. Finally, you should think about your audience!
(adapted from Lambert, Zalabakova & Steen, 2014)

Step One:
Come up with an idea
Write a Proposal

Step Eight:
Feedback and Reflect

Step Two:
Research/Explore/Learn

Digital Storytelling Process

Step Seven:
Share

Step Three:
Write/Script

Step Six:
Put It All Together

Step Four:
Storyboard/Plan

Step Five:
Gather/Create Images
Gather/Create Audio
Gather/Create Video

Created by Samantha Morra

(Morra, 2013)

Personal storytelling through digital stories: Digital storytelling is a learning, creating and sharing experience supported by technology, allowing participants to share aspects of their life stories through the creation of their own short digital media productions.
Moving from individual to collective storytelling: Digital stories can be used as a springboard for a participatory video process, and as a way of moving from very personal, individual work, towards a group storytelling project. Central to this shift is a process of reflection and analysis of digital stories by the storytellers themselves.
Collective storytelling through participatory video: Together, participants discuss and agree on a narrative for the film(s) they want to make, and go on to produce these films. It is an empowering process, enabling people to take action for solving their own problems and communicating this to decision-makers, their communities and the wider public.
(adapted from Transformativestory, 2018)

Studies show that personal narratives provide a space to explore, understand and link past experiences with current situations and future conceptions (McKay & Ryan, 1995; McCorquodale & Kinsella, 2015), and to create meaningful bridges between participants' personal and professional lives and arenas (Walters, 2014; Haug et al, 2012). Studies point out that the personal dimension can potentially prompt the participants to 'look at themselves in the mirror' through self-representations and reflect on themselves (Lundby, 2008), and can act as a bridge to community-building and relational engagement based on how the participants are brought into each other's realities through the story sharing in the "story circles" (Haug et al, 2012). It also potentially supports social reflection and development of learning in communities of practice (Fletcher & Cambre, 2009). The multimodal dimension where the participants produce their own digital video by the use of text, images, voice, music, animation etc. holds potential for the participants accessing and investigating experiences and their own conceptions from different angles (Ørngreen et al, 2017). Also, the multimodal dimension supports participants with reading and writing challenges, so that they can engage fully in the production, reflection and learning processes (Gythfeldt & Ohlman, 2012).

Earlier studies of DS interventions in educational organisations indicate that DS potentially supports clarification of professional understandings and negotiation of professional identities (Jamissen et al, 2017), bearing in mind that the goal was not to create consensus and complete alignment, but to support and explicate productive ways to build working combinations of diversity and unity (inspired by Akkerman & Bakker, 2011 in Jamissen et al, 2017).

In conclusion, the experience from the research literature and searching online traces of existing practices is that DS can support social interaction, feelings of empathy, and giving access to the participants' past experiences, among others. The challenge in this project is to gain this and also maintain the framed TPD theme in question – the science teacher profession. One option could be to be strict on the content of the digital stories,

but this may lead to the suppression of upcoming issues vital to reflect on to create transformative learning and persistent changes. In this project, we turned to specific sketching processes, as we, on previous occasions, had seen these sketching processes work as a catalyst for presenting a multitude of issues at play, facilitating visual filtering and allowing participants to gain new perspectives on these issues (Ørngreen et al, 2017). In the workshop, we investigated when and in which ways sketching can be included in the DS process. The sketching processes was based on Systematic Inventive Thinking (SIT), originally developed for problem-solving and inventive thinking in relation to product development (Barak & Albert, 2017). In these sketching processes, the participants were asked to experiment with grouping some elements, deleting others, clarifying patterns and bringing certain similar issues closer together.

It is beyond the scope of this paper to include a full review of sketching in creation and design processes, except to point to, for example, the independent works of Gabriella Goldschmidt (2003), Donald Schön (1992) and Bill Buxton (2007), which all highlight the conversational reflective aspects of sketching, whether as a way to have inner dialogue or as shared reference points in collaborative interactions.

Our agency perspective is inspired by Engeström et al and their transformative agency in a cultural activity theoretical perspective, which emphasises the collective processes (Engeström, Sannino & Virkkunen, 2014) and their change laboratories focusing on collaborative design as a strategy to support teachers' agency (Severance et al, 2016). Also, we resonate with the detailing of how agency approaches were used in a social design experimentation in Gutiérrez & Jurow (2016), where the objective was to obtain social equity and learning, and allow for designing the participants own futures.

3. Research design and context

As presented, this research stems from a small segment of a larger research project on online teacher professional development (oTPD) for science teachers in Danish elementary schools. The development of the oTPD was led and done by the Kata Foundation, and the research by Research center for Video @ILD-lab Aalborg University, Denmark during the years 2013–2017. The online resource is Klog på naturfag (KpN) – in English, Smart About Science – and is accessed at www.klogpaanaturfag.dk. The Kata Foundation is a non-profit project fund which works for the purpose of promoting knowledge about learning.

The project was a design-based research project (Amiel & Reeves, 2008) ending in 2017, which included a 3½-year data-gathering process including quantitative and qualitative data. As a part of the qualitative data, a two-day DS-inspired workshop was conducted in December 2016 with two science teachers from an elementary school in Denmark; participation was not mandatory, but voluntary. This paper's research is based on that workshop.

The data collection linked to the workshop included a qualitative mail questionnaire completed by the teachers before the workshop, as well as reflection notes during and after the workshop produced by the facilitator and the co-facilitator, including an evaluation at the end of the workshop in the form of a talk with the participating teachers. Furthermore, an interview was held with the co-facilitator shortly after the workshop, and a mail questionnaire was processed with the teachers a few months after the workshop and repeated one year after the workshop.

The workshop was arranged as a two-day workshop away from the school over three days, with one day back at school in the middle to relate the workshop to everyday activities. Prior to the workshop, reflection on current practice was initiated with a couple of questions and use of the online resource KpN. The workshop began with questions like: *what do I do as a science teacher; why do I do what I do; where am I now;* and *where do I want to go and how do I get there?* This was followed by DS activities, such as manuscript writing, all framed within the science teacher practice. The facilitator and co-facilitator both participated in these exercises and sharing, aiming to support a non-hierarchical setting and trust.

On the second day, SIT-inspired sketching sessions were initiated, aiming for a visual summary and extract of the pivotal points in their story, as well as to modulate these visuals (by multiplying, subtracting, merging and/or changing dependencies) and thereby to explore perspectives and solutions. The participants implemented these perspectives into their manuscripts after a sharing session, and then they individually recorded their voice-over and produced their digital video stories, which they shared in a feedback session.

In the workshop, the teachers initially explored and identified aspects of their individual science-teaching practice. They identified that one of their pivotal challenges was mutual, and they both chose to make these challenges the focal point in the following reflection exercises and story productions. These challenges were centred on difficulties with their science-teacher team. They both felt there existed a lack of knowledge-sharing and lack of collaboration in general on their team.

Our approach to the data collection was partly ethnographical and narrative research and partly participatory action research (Creswell, 2012, e.g. p. 20). The planning and pre-phase were conducted with three researchers. Two researchers facilitated, and the third person served as an external part in the post-phase and in the analysis, asking critical questions to bring the narrative analysis forward and to understand the actions and impressions of the participants' experiences before, during and after the workshop. We focused on identifying signs of reflection and agency. We focused on identifying signs of reflection and agency, as well as signs of change in the participants' understandings and mindsets in relation to the chosen aspect, their experiences of possible actions, their motivation, and their actual actions back at their school. As such, the research rested on a methodological assumption that research of this kind may be well-investigated in small pilot-like sizes, but that these still have to take place in real contextual settings, in an intervention or real-life cases (Creswell, 2012, e.g. p. 20, 69 and 582–4).

4. Empirical findings

On a general level, the teachers stated that the workshop was a positive experience and that it 'moved and shifted something' for them. For example, one of the teachers came to realise that he was not "visible" and not active on the science team, and he experienced a motivation to change this.

They expressed an experience of personal benefit in relation to their practice. For example, they experienced that the explorations from different angles resulted in understandings they did not have beforehand, and both teachers pinpointed that, above all, the most important outcome of the workshop for them was new awareness and insights into what was missing for them personally.

During the workshop, the relation between the two teachers changed. Both teachers described how they were motivated to collaborate with each other in the future. This was a new motivation, given that the two teachers described their relationship as distanced beforehand, and that they did not have any specific interest in each other. The fuel to establish this closer collaboration seemed to come from the identification of a mutual challenge and jointly striving to change aspects at their school; merely spending time discussing these issues provided each with a deeper knowledge of the other. The interview with the co-facilitator showed that she pinpointed this improved relationship between the two teachers as a remarkable change during the workshop. The co-facilitator described the relationship between the two participants as 'distanced' and even strained at the beginning of the workshop, and that this changed during the workshop into a genuine interest and a confident atmosphere. The co-facilitator also noted that as the two teachers were the only two participants at the workshop, they were forced to relate to each other, where they might had avoided each other in larger settings.

The teachers stated in the evaluation that the actual implementation of the changes at the school was difficult, but they found that they were encouraged by having a fellow colleague with the same agenda. They also described how their colleagues reacted with curiosity and interest to their experiences from the workshop. This evoked dialogues at the school, where colleagues expressed similar needs for knowledge-sharing on their teams, and they agreed to prioritise and improve this in the future. The teachers described how they experienced having adopted a new role as 'joint ambassadors' of a sort at their school.

In the data collection two months after the workshop, one teacher responded that the workshop had been referred to several times at their school in the intervening time, and both teachers felt that something had shifted, even though some of these aspects still had not changed at the school. The teachers described how they continued to try to create changes. For example, a meeting was organised focusing on collaboration, which uncovered how the school management could facilitate a better collaboration. This issue had afterwards become something the school management had chosen to prioritise.

In the repeated questionnaire one year after the workshop, one teacher summed up the workshop as being challenging in a constructive sense. It gave time and space for reflection, worked as self-development and investigation into one's own teaching practice, facilitated professional dialogues among colleagues, and provided a positive experience in collaborating with the teacher colleague through the workshop. The challenging part had been recording oneself (voice). The teacher elaborated on the after-effects of the workshop and described how it had initiated ongoing reflection dialogues between the two participating teachers focusing on collaboration at their school.

Though the overall experience has been positively evaluated by the teachers (also over time), there was a large barrier in the first step – that is, to get teachers to take an active part in the initiative. Challenges related to the school's way of organising TPD and to the unknown territory of having to work with DS approaches.

In the interview with the co-facilitator, she reflected on the sketching processes: she experienced them as challenging for the participants, but also beneficial. The challenge was an initial restraint among the participants to grasp, translate and deduce complex, lived issues into a visual image. The beneficial aspects included a somewhat playful approach to personal reflections and support as the participants were asked to put something at stake and bring challenging issues into the reflections. The 'pen and paper' mode seemed to ground and support some of the challenging personal aspects, according to the co-facilitator.

In relation to TPD, the DS process is seen as useful, as it provides structure through phases and activities that aid in the formulation of issues that are important to the participants, which they themselves were not able to explicate to the same degree without the DS process. As DS did not originate in the field of learning, and certainly not as a professional practice TPD tool, but as a way of giving personal voice to participants, it also has some limitations. Also, as shown in the theoretical section, several researchers and practitioners have included more participatory approaches.

5. Discussion, conclusion and future perspectives

In this pilot, we identified signs of change in the participants' understandings in relation to their chosen aspect, a change in the perceived action space, and also in their motivation to implement changes back at their school: within themselves (changed personal behaviour) as well as the collegial relationship and collaboration. We found that the teachers' sense of agency changed, and the fact that the two participants were colleagues at the same school, in the same context with a joint agenda, supported this sense of agency.

Earlier studies focusing on DS in educational institutions showed that some participants have a resistance to 'exhibit' and share personal stories from their private sphere during the workshops (Ribeiro et al, 2014; Haug et al, 2012). Our research is related to TPD and with teachers from the same school, who shared with colleagues on matters that were personal to their teaching. It was therefore interesting to see that they shared willingly about difficult subjects, even though the participants had a strained relationship as they entered the workshop. This setting could have pushed the participants to maintain a distance and resist sharing of personal issues. Nevertheless, the participants expressed an improvement in their relationship and are motivated to collaborate more closely on joint matters.

In our analysis, we also investigated which ways sketching can be included in and support the DS process. The research review showed that, as DS often results in participants finding many and varied themes of interest, sketching was investigated to see if it could be used as a way of retaining the oTPD theme in the workshops and in the personal video stories produced. It appears that DS and the sketching process supported both the first and second objective. The first was that the workshop provided a means for collecting data in relation to the larger research project focusing on TPD. Secondly, DS seemed to support professional reflection and TPD in particular insofar as that the teacher team became aware of issues they had not been explicitly aware of prior to the workshop. Also, sketching supported a more contingent focus on the theme at hand, oTPD and KpN, meaning that a personal but common theme was clear for all present – i.e. even though the sketching in some sense made it clear that there was a common focus, there was also room for individual investigation and personal story.

However, the participants reported challenges in implementing fundamental changes back at their school, both on their teacher team and at the organisational level. Nevertheless, some changes have occurred, and both the

teacher team and the school management are involved in constructive changes a year after the workshop. In future research, it would be relevant to investigate possible development of DS and sketching approaches in TPD in terms of scalability, culturally diverse groups, a prolonged process, and using DS and related tools in online environments, e.g. in an oTPD setting. Even though the choice of only two participants was a matter of piloting the method, and the initial idea was to scale the number of participants at the workshop, there may be a particular strength in the size and that the participants was from the same team, turning the DS workshop into an almost team-building and mentoring setting. It will be interesting to see if and how this can be scaled in the number of workshops and participants.

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