JOURNAL OF E-LEARNING AND KNOWLEDGE SOCIETY
Vol. 18, No. 3 (2022), pp. 178-185

Digital Storytelling as a tool for reflecting on university students' future professional competencies

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(submitted: 29/5/2022; accepted: 29/12/2022; published: 31/12/2022)

Abstract

The paper presents the findings of a study of the application of a teaching model (Digital Storytelling for Competencies—DSCM) which used Digital Storytelling to encourage students enrolled in a second-cycle degree program in Social Work to reflect on their future professional competencies. Students analyzed and discussed particularly significant stories (critical incidents) drawn from real-life work situations, which they then made into short digital story videos, casting themselves as actors in a role-play process. Students' perceptions were analyzed to determine the model's effectiveness, particularly as regards the extent to which the process of creating the digital story was able to stimulate reflection on the most important competencies required in the students' future working careers. The findings were highly encouraging, and the model will be tested with students and professionals together in the field.

KEYWORDS: Digital Storytelling, Professional Competencies, University Students.

DOI
https://doi.org/10.20368/1971-8829/1135686

CITE AS
Petrucco, C. (2022). Digital Storytelling as a tool for reflecting on university students' future professional competencies. *Journal of e-Learning of Knowledge Society*, 18(3), 178-185. https://doi.org/10.20368/1971-8829/1135686

1. Introduction: storytelling in educational and organizational settings

Studies have found to be important in a variety of social and educational settings because of its potential for improving communication effectiveness and for reflecting on stories of work or life experience. The brain, in fact, appears to be predisposed to impose order on experience in the form of stories, and storytelling can improve the understanding of content by synchronizing the neural processes in the brains of both the speaker and the listener (Stephens, Silbert & Hasson. 2010) in a sort of "brain coupling" that thus facilitates successful communication. Storytelling is essential in constructing meanings, as it is a process where speaker and listener interact trying to generate shared interpretations (Scaratti, Gorli, & Heldal, 2019).

Storytelling also helps in exchanging knowledge that would be difficult to convey in other ways: while data and information can be readily codified in formal supports (text, graphics, databases), practical knowledge ("knowing how", as opposed to "knowing that") is difficult to formalize because it belongs to the submerged part of that enormous cognitive iceberg, most of which is out of sight, that we call "tacit knowledge" (Polanyi, 1966; Whyte & Classen, 2012). One of the preferred ways of communicating tacit knowledge between people is storytelling, i.e. talking about personal experiences that involve both the cognitive and the emotional domains (Orr, 1996; Hayes and Maslen, 2014). In this connection, the neurophysiologist Damasio (2011) maintains that "there is no cognition without emotions" (Bondebjerg, 2014; Aldama, 2015).

2. Storytelling and the role of "war stories" in problem solving processes

Tacit knowledge is made up of a cognitive dimension – mental models, points of view, values and beliefs that determine our perception of reality – and a technical/practical dimension (know-how) consisting of skills from the experience gained in tackling problems. In professional settings, the knowledge that is

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explicitated and shared as stories often attempts to describe what are called "ill-structured problems", or problems difficult to solve using known procedures or standard methods. These stories become the so-called "war stories" that become part of the memory of the community. People then draw on this memory as they seek to solve similar problems (Milton, 2010). War stories can thus be seen as "transitional objects", as they enable practical knowledge to be readily retrieved and usually feature three important dimensions (Boje, 2008): (1) the emotional dimension, (2) a rich description of a setting or a situation, and (3) a clear statement of the problem and its solution.

Remembering the story, we try to understand whether the solutions adopted in the past can, with some adjustments to suit the new context, be reused or at least serve as a springboard for new solutions (Denning, 2002). Schön (1983) invites us to reflect on the similarities and differences we perceive when comparing the current situation and the remembered or narrated story, thus contributing to enriching the repertoire that can be drawn on in analyzing subsequent cases encountered in practice. Similarly, Lave and Wenger (2006) maintain that learning during apprenticeships is often aided by telling stories about particularly significant cases. Today stories can be told and shared on video: digital storytelling is now a consolidated practice in teaching (Lambert & Hessler, 2018) and is also becoming more common in broader professional settings (Challinor et al., 2017) as that in social work practice (Chan & Sage, 2019).

3. Digital storytelling as a tool for reflective practice in a university course

3.1 Competencies and reflective practice

The literature on the topic of professional competencies has long emphasized the importance of reflective processes: experiences do not lead directly to improved practices, but it is very important to reflect on these experiences (Schön, 1983) in order to then take action for improvement. A key role in this process is played by autobiographical thinking, which uses storytelling as a self-reflective practice by organizing experiences. The question is thus one of being able to manage critical reflective practice to arrive at transformative learning (Mezirow, 2018). The literature generally defines competency as the ability to use specific knowledge and skills in the work setting for daily activities and to solve problems (European Qualifications Framework, 2009) (Council of the European Union, 2018). In the study presented here, the instructors used digital storytelling with students enrolled in second-cycle bachelor degree program in Development and Management of Educational Services (Social Work) in Italy: it prepares specialists competent in the organization, coordination and evaluation of educational, rehabilitation and training services with a peculiar attention to individual with special educational needs.

We use it as a means of stimulating the students to reflect on their future professional competencies, particularly as regards: 1) relational and communication skills (Nair & Yunus, 2021); 2) evaluative, reflexive and problem solving skills (Walters, et al., 2018; Stork, 2020; Poonsawad, Srisomphan, & Sanrach, 2022); 3) professional skills in the specific work setting (Douglass, Martínez & Holmes, 2022; Kotlyarova, Rudenko & Shubina, 2020). These competencies are implicit in many frameworks such as that developed by the US Council on Social Work Education (CSWE, 2015), which states that social workers must "apply critical thinking", and in particular "critically analyze, monitor, and evaluate intervention and program processes and outcomes."

3.2 The DSCM model: Digital Storytelling for Competencies

During the course, each student was asked to share a story on an online forum about a particularly interesting real life situation (i.e., a "critical incident") that they themselves had experienced in a professional community, either at work or in an informal setting, and how it was solved. Students were divided into groups (3 to 5 people) and each group decided which of their stories to develop. In a short workshop, they gained the technical and methodological skills needed to work with audio/video editing software. In many cases, the students recreated the original settings and cast themselves as actors in the videos they made.

We created a model to help students to carry out the activity: the DSCM (Digital Storytelling for Competencies Model), partially based on Kolb's experiential learning framework and Schön's reflective and transformational learning. The approach taken by Schön (1983, 2008) is particularly pertinent here because analyzing the story brings tacit knowledge to the surface, along with the "hidden" competencies that are rarely brought out in formal reports, forms, meetings and the like (Bhardwaj & Monin, 2006).

The DSCM model consists of four steps:

(1) Remember a personal experience or listen/read an experience told by others (surrogate experience).

(2) Analyzing the narrative completing a Story Analysis Rubric, reflecting specifying who the characters in the story are, the setting, the problems and how they were solved, the competencies required for an effective solution, and lastly, the emotions that were perceived.

(3) Preparing the storyboard for the video or the slide-show. In this stage, the students must use the Story Analysis Rubric to construct a story with a consistent narrative structure with all the characters involved, the description of the problem and the solution. The narrative structure employed is the classic Dramatic Arc (Campbell, 2008), first outlining the setting

(Exposition), then the problem (Incident, Rising Action, Climax) and lastly the solution (Falling Action & Resolution), describing the character's emotions at each step.

(4) Finally, realizing the short digital video (max. 4 min.). In the video/slideshow creation process, they try to use their voice to personalize the story and the most suitable music or other sounds that support the storyline (Robin, 2008). The resulting video can be shared with other people and can itself becomes a real surrogate experience. The narrative form, in fact "offers the listener an opportunity to experience in a surrogate fashion the situation that was experienced by the storyteller" (Sole & Wilson, 2002).

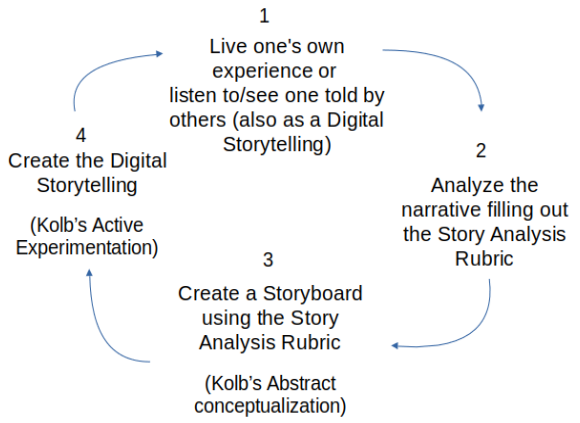

Figure 1 - The DSC model followed by the students to realize the video and to reflect on the competencies needed to solve the problems in the stories.

The students were also asked to indicate the emotions of the characters in the stories; these are what make a story "interesting" and worthy of attention, as they indicate the characters' level of emotional engagement and, consequently, the importance they assign to the problem (McDrury & Alterio, 2003). The process of identifying emotions obliges the listener to identify with the characters' point of view and try to make sense of their thoughts and feelings (Christiansen, 2011), thus developing the emotional intelligence that is one of the basic competencies that social workers must have (Grant, Kinman & Alexander 2014).

Lastly, it should be emphasized that the students engaged collaboratively in all these stages, that of reflecting on competencies in particular: the reflection took place during the elaboration of the Story Analysis Rubric on a forum where competences and actions taken were discussed and where instructor and tutors gave formative feedback. To assess the overall quality of the Digital Storytelling produced we used the same SAS Rubric items and other elements such as the point of view, dramatic question, emotional content (Barret, 2006) and other technical elements such as audio, music and video quality.

4. Research Questions and Methods

4.1 Research Questions

This exploratory study seeks to understand students' perceptions of digital storytelling as a tool for reflective practice, and thus to answer the following research questions:

(1) What is the perception of digital storytelling as a tool for reflecting on professional problem solving practices?

(2) What do students perceive to be the most important competencies stimulated by creating the digital story?

(3) How effective do students perceive digital storytelling to be as a teaching tool in a university course?

4.2 Methods

The mixed method study was based on a questionnaire for a total of 22 items, (5 of which open-ended) which above all investigated the perception of Digital Storytelling as a process that stimulates meta-cognitive processes relating to the specific skills of the future work context specifically about: Collaborative, relational and negotiation skills, Communication and expressive skills, Reflective, critical and problem solving skills,

Furthermore, we tried to explore the potential of the Digital Storytelling creation process to increase learning motivation and as a tool to develop Digital/Multimedia skills. For the close-ended questions, a 5-point self-anchoring Likert scale was used where 3 is the neutral central option, 1 and 2 reflect negative judgments, and 4 and 5 reflect positive judgments. A pre-analysis was carried out for each question to determine whether the respondents could have been influenced by how the question was phrased, and whether the response scale was appropriate.

As a probabilistic sample was not used, the results were analyzed using simple descriptive indices and, where possible, ANOVA. After the last class they could choose to fill out the questionnaire or not and use only a nickname. In the open-ended questions, the students were asked to expand on their answers to the closed-ended questions, in particular as regards the effectiveness of the analysis and video creation stages in triggering reflection on professional competences. Qualitative data analysis was carried out using the Maxqda software package.

A total of 73 out of 83 students attending the course (F=63, M=10), completed the questionnaire with a response rate of 88%. Students groups for the activity were formed spontaneously. Average age was 26 years.

5. Analysis of Results and Discussion

5.1 Reflection on professional competencies

When asked whether digital storytelling stimulated reflection about their professional competencies, the majority of students (85.1%) answered in the affirmative (43.2% a lot, 41.9% a very great deal). An interesting correlation with students' age was found in a subsequent ANOVA analysis: those over 25 years old tend to express a more positive opinion than the younger participants (F=3.165, Pr=0.04) may be that this is because the older participants are chiefly working students who were more readily able to imagine how effective digital storytelling might be as a reflective tool in their own jobs.

5.2 Competencies stimulated creating the Digital ST

The answers to this question chiefly indicated three macro-competences (see Tab. 2): 1) reflective skills for professional problem-solving; 2) teamwork, communication-relational skills; 3) digital and media skills. The competencies that were most frequently mentioned were reflective and problem solving skills (79.8% a lot or a very great deal) and teamwork-relational skills (81% a lot or a very great deal), while the least mentioned were digital and media skills (63.5% a lot or a very great deal).

Digital Storytelling was thus perceived as stimulating reflection on the competencies needed to solve a concrete problem in a professional setting, while teamwork skills were seen as useful for group discussion and review of the story to be represented. Digital skills, though indicated by a fair percentage of participants, were probably mentioned less frequently because many students stated that they were already able to create videos and how to edit them.

Competence	1	2	3	4	5	M	SD
Reflective and professional	1.3%	2.7%	16.2 %	48.7 %	31.1 %	4.09	0.77
Teamwork, relational and comm.	0.65 %	3.4%	14.9 %	52.7 %	28.3 %	4.08	0.73
Digital and media	0.0%	2.7%	33.8 %	39.3 %	24.2 %	3.87	0.80

Table 2 - Students' perception of digital storytelling as a tool that can stimulate specific competencies.

5.3 Advantages of digital storytelling have compared to activities done in other courses

Students perceived digital storytelling as a process that stimulates their meta-cognitive processes (69.1% a lot or a very great deal), and that also increases their intrinsic motivation to learn (68.7%) and is effective in helping learn subject-specific content (71.4% a lot or a very great deal) (Tab. 3).

Dimensions	1	2	3	4	5	M	SD
Meta-cognition	0.0%	5.4%	23.1%	39.0%	30.1%	3.90	4
Intrinsic motivation	0.0%	4.5%	24.2%	45.4%	23.3%	3.90	4
Explicitation of content	0.0%	1.3%	24.4%	53.2%	18.2%	3.96	4

Table 3 - Students' perception of digital storytelling effectiveness in teaching.

5.4 Analysis of the responses to the open-ended questions

- EFFECTIVENESS FOR REFLECTION ON PROFESSIONAL COMPETENCIES

Students saw the experience to be very positive, especially because it helped them learn to act and reflect professionally in a university course that they had thought was mostly theory-oriented (Jonas-Dwyer, Abbott and Boyd, 2013). Many students thus realized that self-reflection processes are not so easy to activate (Ryan and Ryan, 2013), and that special training is needed in order to acquire these metacognitive skills. In our case, unlike other researches (see Challinor, Marín & Tur, 2017, p.15), the reflective process seems to have been helped by participation in a group rather than when activated on an individual basis. On the whole, the open-ended questions confirmed the previous responses regarding digital storytelling's ability to stimulate reflection on professional competencies, an activity that might be difficult to engage in if the stories were told in person. Respondents also noted the distinction between simply listening to a "war story" and working it up into a shooting script for the video:

> *"The digital story has to take a lot of later reflections and exchanges of ideas into account that are needed to create it [the shooting script], so it's not like simply telling about the experience. In addition, the digital story lets you spend time on the setting and the circumstances, not just the action".*

- EFFECTIVENESS OF NARRATING PROBLEMS IN REAL-LIFE SETTINGS

A number of interesting points emerged regarding the importance of storytelling about real-life problems and settings. In fact, all the digital stories created by the students represent professional settings similar to those

they will work in after they receive their degree, and in which it was possible to narrate actual experiences focusing on problems and solutions.

> *"The group was pleased to see a fact represented that had really happened in the community some of them belonged to. It was exciting for them to see once again how the situation evolved: from the problem to the solution thanks to teamwork".*

In this connection, the literature confirms that when experts in a certain field are faced with a critical problem, they frequently prefer to base their approach on concrete, actual past experience rather than following abstract rules (Calderwood, 1988). storytelling is also a fundamental component of case-based reasoning (Kolodner, 1997), a process focusing on analogy that seeks to solve a new problem on the basis of previous solutions to similar problems. Polkinghorne (1988) emphasizes that professionals prefer to frame clarifications and explanations in narrative form, while Schön (1993) found that architects, engineers and even psychotherapists give preference to narrative in talking about their own professional experiences. In this sense, some students emphasized the "transformative" power of storytelling:

> *"The practice described in the video affected me a lot [..] because when I stopped to think I found a number of aspects that will lead to an improvement in my practices".*

Scholars such as Mezirow (2018) speak of the transformative value of storytelling, referring to the role of reflection in reconstructing knowledge gained in the past and the ways in which it was gained. In her "Map of Learning", Moon (2004) places most reflective activities in the last two steps, "Working with Meaning" and "Transformative Learning": here, students should activate metacognitive processes that are fundamental for improving their future professional practices in real-life settings.

- EFFECTIVENESS IN SURFACING TACIT KNOWLEDGE

Students also mentioned digital storytelling's ability to bring tacit knowledge to the surface. In this connection, it was interesting to note that the earlier responses to the closed-ended questions showed a good positive correlation between responses to 1) Digital Storytelling as a tool that can highlight the emotional dimension and responses to 2) Digital Storytelling as a tool that helps bring tacit knowledge to the surface (ρ=0.629, p value=0.000). It is likely that making emotions explicit when creating the video was seen as useful in communicating tacit knowledge more effectively: a number of studies of speech acts (Turner, 2012) which are in general emotionally charged, have found that they can facilitate an understanding of complex content, if communicated as a story.

- EFFECTIVENESS OF THE STORY ANALYSIS RUBRIC

For many students, the process of designing the digital story using the Story Analysis Rubric was fundamental in developing the shooting script and identifying the characters, problems and professional competencies involved:

> *"Thanks to the Story Analysis Rubric we were able to reconstruct the whole sequence, reflecting on and precisely identifying the problems and how [with what competencies] they were overcome."*

A good correlation was found between the positive responses concerning the use of the Story Analysis Rubric and the positive responses concerning the digital story as a means of stimulating reflection. This probably indicates that a clearly structured rubric can be an important aid in identifying the elements of the competencies involved and thus trigger reflection (ρ=0.624, p value=0.000).

- EFFECTIVENESS OF DIGITAL STORYTELLING AS TEACHING METHOD AND LEARNING RESOURCE

Digital storytelling was also seen as a very effective means of improving teaching, and the responses to the open-ended questions confirm the quantitative data:

> *"Creating the digital story is educational [..] because to be able to make the video you have to have very clear ideas and concepts, without realizing it you're much better prepared on a topic than with another academic assignment."*

> *"I took on something I'd never done before, I found it entertaining and something you really get caught up in: it's by no means true that activities at the university always have to be boring, and I'd also like to use it in other courses."*

Here again, there was a significant correlation between the perception of digital storytelling as motivating for learning and its effectiveness in helping learn subject-specific content (ρ=0.775, p value=0.000), and between digital storytelling as motivating for learning and the desire to use it in other courses (ρ=0.732, p value=0.000). In other classes they used teaching / learning methods that included technology and multimedia and their opinion was quite "neutral". So, it appears that the positive judgment may have been stimulated by the new storytelling approach we used, but the "novelty" factor was not specifically examined in this study.

6. Conclusions

The overall study's findings indicate that students can perceive digital storytelling as an effective tool for reflection, with all the potential to be used as an approach that can complements other teaching/learning methods.

It can thus be regarded as both a *process* and a *product*: a process, because the reflection on practice that takes place when making the videos can become really transformative; as a product because the digital story reconstructs the problem solving practices and documents them for future use in professional communities of practices. Indeed, the students chiefly emphasized digital storytelling's capacity to stimulate reflection on the competencies called for in their future professional practices and the ability to effectively communicate content dealing with experiences, processes and emotions.

It was also found that reflective and learning processes seem to be effective in direct proportion to their ability to mediate stories that are perceived as authentic real-life experiences with a wealth of personal considerations: the students' responses confirm the studies that indicate that reflection on past experience is essential for "future actions" (Schön, 1995) (Moon, 2004; 2013) and for creating situated knowledge that can be used to solve new problems (Kolb, 2014) (Hillon and Boje, 2017). In our case, the actual experiences narrated in the digital stories are the result of a process employing a structured method (the DSC model) that can reproduce professional settings where students can gain an understanding of the competencies that will be required in their future professions and reflect on the best practices to adopt (Boud & Walker, 1998).

Digital Storytelling has also been used to bridge micro-macro practice gap (see Chan & Sage, 2019, p.10), in this sense, future development of the model will be carried out in close collaboration between the university and social work practitioners: direct contacts will be made with expert professionals in the field who are willing to tell their stories, which the students will then make into short videos and share with the entire community as a means of improving professional practices.

7. Limitations

This study has some limitations: there is not yet a specific validated tool to determine the perceived usefulness of the Digital Storytelling creation process for the improvement of professional skills, so we had to create our own questionnaire. A further limitation is that it was not possible to verify the potential positive effects of a Digital Storytelling creation process directly in the working context.

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