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## Digital storytelling for social and international development: from special education to vulnerable children

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**Abstract:** This paper presents the digital storytelling for development model (DSD). DSD is a process model for supporting the implementation of digital storytelling activities within the broader framework of social and international development projects. DSD blends storytelling, visual arts and digital media to make a difference for vulnerable children, including children with special needs, and in development and integration projects. Vulnerable and special needs children often experience difficulties in communication with adults and peers, both as language difficulties and as inability to focus on personal feelings and thoughts, and consequently to express them properly. Removing such barriers is one of the main goals of special and social educational projects, and a key step towards integration and personal development. Digital storytelling offers an opportunity to tackle the issue, and DSD provides guidelines for implementing projects in this context by focusing on fiction, engaging all stakeholders and providing a high degree of flexibility. The paper presents DSD, and illustrates it with real cases, discusses its evaluation, and indicates ways to adapt it to different project settings.

**Keywords:** storytelling; digital media; special education; vulnerable children; organisational development.

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## **1 Introduction**

This paper presents the digital storytelling for development model (DSD), a process model which supports the design and implementation of digital storytelling workshops within the broader framework of social and international development projects. While a precise definition would require a larger space, to the purposes of this paper we can define social development projects as targeted towards the improvement of the living conditions of vulnerable groups (for example, immigrants, people with disabilities, unemployed, elderly people, etc.), often focusing on integration. On the other hand, international development projects tackle the basic challenges described in the United Nations Millennium Development Goals in developing countries, also working in many cases with the most vulnerable groups of the population. In this paper, we always refer to the digital storytelling workshops as parts of a broader (in terms of goals and scope) social or international development initiative.

Telling a story means much more than reporting facts. It implies selecting relevant experiences and conveying a meaning that forms a consistent whole out of characters, events and locations. Telling a story is difficult, and learning to tell stories is a powerful way to learn to understand personal experiences and communicate them to others. The idea behind DSD is to harvest such potential, thanks to the support of digital media, to engage vulnerable children in the development of expressive competencies. DSD was developed over three years of social and international development projects, and eventually refined through PINOKIO, a European project within the Comenius Lifelong Learning Program.

While stories have always been part of the educator’s toolbox, digital storytelling is a relatively recent trend in education (Meadows, 2003). Within the digital storytelling arena, DSD represents a specific approach, designed for supporting activities with children in social and international development projects, for example children with special needs, or children with family issues. In particular, DSD features

- a a focus on fiction
- b the involvement of external stakeholders at multiple levels, including school managers, other teachers, families and sponsors
- c flexibility and adaptability concerning schedule, technologies, and the definition of individual goals.

The paper is structured as follows. The next section offers a short overview of digital storytelling, and positions DSD among other approaches. The following section presents DSD in its fundamental principles and structure, and illustrates it through a project with special education children. After that, a section is devoted to illustrate how DSD integrates evaluation. Finally, other applications of DSD are reviewed, focusing on the fine-tunings operated to tailor DSD to specific situations and requirements. Conclusions and outlooks close the paper.

## **2 Background**

### *2.1 Storytelling, education and digital technologies*

Storytelling is a cornerstone of society, a basic form of sharing experiences and values (Farmer, 2004). Experiencing narratives, either as audience, author or teller, fosters the process of becoming part of the greater society and at the same time builds children's literacy and communication competencies (Engel, 1999; see also, Piaget, 1959). Pre-primary and primary school teachers use stories (for example, fairy tales or folk tales) to teach reading and writing skills, to convey grammar and math rules, or to present concepts. Dramatisation, including the ability to embed information into a narrative setting, is also part of their skills.

In his seminal work *Teaching as Storytelling*, Egan (1986) claims that all teaching, included curricular topics from History to Science, could take the form of a story, thus, constructing learning on narration and exploiting the engagement and motivational power of compelling stories. His line of argumentation moves from the recognition of stories as basic medium for communicating experience, to their role in making sense of an apparently disordered world (Bruner, 1990; McKee, 1997). Indeed, stories have been, and still are, a basic form of teaching (Pedersen, 1995). Stories are usually easy to understand (Bruner, 1990; Gils, 2005) and generate higher levels of engagement and attention than the simple enunciation of facts (Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1993; Polkinghorne, 1988; Young, 1993). The appeal and power of stories is widely acknowledged in the entertainment world, where many products are based on storytelling or exploit storytelling features (McCloud, 1994; Brathwaite and Schreiber, 2009), and such awareness is flowing back to the education domain.

### *2.2 Digital storytelling*

According to Leslie Rule, *digital storytelling* can be defined as “the modern expression of the ancient art of storytelling. Digital stories derive their power by weaving images, music, narrative and voice together, thereby giving deep dimension and vivid colour to characters, situations, experiences, and insights” [Sadik, (2008), p.490]. In other words, digital media offer new instruments for revisiting storytelling, blending multimedia, interactivity and the web into traditional storytelling practices. Digital storytelling was indicated as a new creative cultural mode (Burgess, 2006), and, of course, has the appeal for becoming a new teaching method.

### *2.3 Digital storytelling in education*

Digital storytelling has recently become a topic of its own in the education domain. The core idea is simple: digital technologies, and especially individual media production applications, allow teachers and students to create short digital narrations weaving images, movies, audio, text and music with virtually no infrastructure costs (Ohler, 2006).

Many studies, conducted at different grades from primary to higher education, indicate that digital storytelling offers a meaningful context for the effective integration of digital technologies in the classroom (Sadik, 2008), providing project-oriented scaffolds for interdisciplinary work. The development of a story requires creative work, writing, drawing, technology skills, teamwork, etc. (Robin et al., 2011). Moreover, there is no good story without research and learning key facts (McKee, 1997), which at school means working on the curriculum. Some studies indicate that digital storytelling can offer an opportunity to develop second language competences (Tsou et al., 2006), to understand values and increase communication skills (Combs and Beach, 1994), to learn problem solving and algorithms (Schiro, 2004) and to acquire computer science and programming skills (Papadimitriou, 2003).

Educational researchers and practitioners engaged in digital storytelling projects have developed different storytelling approaches (a review is available in Robin et al., 2011). Some of them have focused on technologies, indicating how to smoothen and make efficient the media development process involved in digital storytelling (cf. Robin, n.d.). However, most methods follow the principle of story first, technology second, putting the development of the narrative structure in the foreground, and exploiting technologies to support the process. The steps provided by the Digital Clubhouse Network (quoted in Farmer, 2004) go in that direction, and so do also the guidelines presented by Ohler (2006; 2008). Following the same approach, the Centre for Digital Storytelling (CDS) provides a reference method (Lambert, 2010), presented at workshops along with various tools, including the digital storytelling cookbook. In DSD as well technologies are instrumental to the development and communication of compelling stories.

Most digital storytelling projects are held in primary and secondary education, and they are usually articulated in two parts: teacher training first, mainly in the form of workshops of a few days, and then the actual project with students. Such a waterfall approach is also used in DSD.

Also, many software applications have been used in storytelling projects. Some of them were designed to support storytelling as such (for example, MS Photo Story), while others are general-purpose applications that can be integrated into storytelling projects (for example MS PowerPoint, MS MovieMaker, Apple iMovie, Apple Garage Band, Audacity, etc.). More recently, mobile technologies have also been exploited in digital storytelling projects (see for example KQED). While not bound to any specific application, DSD was developed for projects in poor areas, and is therefore oriented towards the use of free and open source software.

### *2.4 Digital storytelling in international and social development projects*

The potential of digital storytelling can provide great learning opportunities for children in social and international development projects, for example special education and vulnerable children. Children with disabilities and children with difficult stories (e.g.,

suffering from abandonment, poverty or post-war trauma), often experience poor communication both with adults and peers. Difficulties can take the form of language issues, inability to effectively control non-verbal communication, or even hurdles in focusing on personal feelings and thoughts, and therefore to express them properly. Barriers to expression and communication can generate anger and frustration, and eventually hinder learning and development, generating a negative looping effect (Cognition and Technology Group at Vanderbilt, 1993). Identifying and removing such barriers is therefore one of the main goals of social and international development projects, and also a requirement for starting integration and personal development activities (OECD, 2001). For example, children from previously conflicting families or ethnic groups in a post-war region need to discover that they share some deep experiences before they start to live and build together; mentally challenged children need to be able to give a name to their anger before they can talk about it and control it, etc.

Digital Storytelling, with its blend of personal expression, communication, teamwork and technologies, offers a great potential to tackle these issues (see for example Garzotto and Bordogna, 2010, where tangible technologies were used). Running a digital storytelling workshop within a social or international development project brings in a few additional challenges, to which DSD was designed to respond.

### *2.5 The Sant'Angelo project*

Special education schools in Switzerland were created for the education of children with cognitive and physical disabilities of different kinds, from language and hearing disabilities to behaviour disorders, including important physical handicaps and the down syndrome. Individual situations in special education schools are highly varied, often even within the same class (composed usually by less than ten children). Special education schools are part of the Cantonal education system, and their pupils have been assessed by learning psychologists as requiring a special education program, because their disabilities would prevent them from benefiting from attending regular schools.

In 2008 a special education school in Ticino (Switzerland), Istituto Sant'Angelo di Loverciano, contacted seed, a non-profit organisation, with the idea of developing activities for the development of communication skills of its pupils. Additionally, school managers wanted to use the project for training teachers and integrating technologies in teaching and learning. The Sant'Angelo project was the original stimulus to develop DSD, whose development capitalised on the experiences in storytelling and digital media production of seed's staff. The storytelling workshop, supported by a local private foundation, was integrated in the overall mission of the school (the reference social development project), and ran over the 2008/2009 school year, involving ten special education teachers and about 40 children with special needs aged 5 to 16. This project will be used to illustrate DSD in the following paragraphs.

## **3 Original features of the DSD model**

DSD is based on a few key principles, shared also by most digital storytelling approaches and methods:

- 1 Telling a story means learning. The first principle is that storytellers learn by telling stories, that is, the very fact of creating and telling a story requires a deep learning process.
- 2 Storytelling requires multiple skills: mastering storytelling means mastering different sets of skills, which can be grouped in two categories:
  - a understanding narrative structures for writing a story
  - b being able to give stories a shape, verbally, visually and aurally with the aid of different media.
- 3 Technologies play a three-fold role. Digital technologies play the role of
  - a motivator as attractor, catalyst and enabler of complex learning
  - b expressive instrument, as new tools for expanding a child's expressive palette
  - c sharing medium allowing the production of an easily duplicable output that can be screened, copied on pen-drives or CD, brought home, published on the web, etc.

In the digital storytelling landscape, the novelty of DSD is framing digital storytelling within the context of social or international development projects, and is reflected in four original features that make DSD an innovative model.

- 1 *Focus on fiction.* In general, we can distinguish two fundamental modes of storytelling:
  - a recalling facts from experience
  - b imagining stories, that is, creating fiction.

The former mode is related with memory and making sense of what happened; the latter is important for the development of imagination. Much more than the ability to entertain fancy thoughts, imagination is the core ability to imagine reality, to virtually try out actions and explore possibilities, and to generate visions that guide experience. Imagination is therefore necessary for thinking about the future and for imagining new scenarios, and it is also at the basis of ethical thinking – indeed, it is paramount for all high-level thinking (Cole, 2002; Egan, 2006; McCrary, 2002; McCrary & Mazur, 1999; McCrary & Mazur, 2008). Most storytelling approaches focus on first-person biographical stories (e.g., telling the story of a dear place, narrating a key event in your life, etc.), while DSD works on fiction. This choice stemmed from the acknowledgement that many special education or vulnerable children have a difficult story, often scarred by lack of love and attention, fear, violence, etc. Focusing on such experiences without being overwhelmed requires mastering storytelling at high level and professional psychological counselling. For this reason, fiction is integrated in DSD as a way to project experiences on fictional characters and settings. From this point of view (like most fairy tales), fiction is a different and deep way of talking about reality, and not of escaping it (McKee, 1997). For this part, the key concepts and practices in DSD have been derived from the experience of professional storytellers, mainly through the book of McKee (1997), *Story, substance, structure style and the principles of screenwriting*.

- 2 *Adaptability.* Co-design is possible because DSD, while grounded on steady principles, is highly adaptable

- a to the needs of individual children
- b to different situations.

DSD is based on differentiation: each individual child can find her/his role within a DSD workshop: writing, illustrating, narrating, recording, etc. The idea is that ‘each one has her/his task’, that is, good teams will distribute tasks according to personal inclinations, competences, and individual goals. Teachers and educators can therefore identify individual goals for their children, and arrange activities so that each of them can do what is best. Moreover, thanks to the specification of its main activities, DSD is adaptable to different target groups (from primary to higher education students, or adults), time-frames (from six-month projects to four-day workshops), visual techniques (drawing, LEGO bricks, acting, etc.), and technologies. This makes it a good candidate to structure projects in high-uncertainty situations, as it is often the case in international cooperation. Below, some examples of adaptation are discussed.

- 3 *Co-design with key adult stakeholders.* The success of social and international development projects depends on the engagement and participation of local people; the sustainability of those projects depends on the learning achievements of local people, if they will be motivated and able to carry on the activities beyond the project deadline. In education projects, such as the ones discussed here, while children are the main beneficiaries, teachers and educators are usually the key stakeholders, those upon whom the success and sustainability of the project depends. DSD was designed to maximise the engagement and learning of key stakeholders in order to enhance the success and sustainability both of the digital storytelling workshop in itself, and of the whole social or international development project. This is achieved through training and co-design activities, and is to be distinguished from the involvement of external stakeholders, discussed below. In the Sant’Angelo project, this was implemented as two sequential phases (teacher training, then students workshop); in other experiences, reported below, the same principle was applied with a different format.
- 4 *Involving managers, families and the community.* Social development stems from individual and organisation development. Besides training and involving teachers and educators, DSD also considers what happens around the workshop, and foresees moments to engage so-called external stakeholders at different levels. The actual capitalisation of a DSD workshop depends on institutional commitment: as in any technology integration or development process, managers play the key role in deciding that the organisation will follow-up (Buzzetto-More, 2007). For these reasons, DSD includes specific moments where the active involvement of managers is expected, making them play a specific role within the project. In the Sant’Angelo project this was realised by inviting managers to key training sessions, and by involving them in the co-design valorisation activities. Also, DSD was designed in order to maximise the impact of the workshop also in the organisation’s environment, i.e., families, the Department of Education, the local community and, in some cases, sponsors. Local media are usually a key channel for this, while the digital stories and the final event in DSD create good opportunities to let stakeholders have a glance in the school’s educational work. In the Sant’Angelo

project, this was particularly implemented with the final event, for which local media coverage was ensured.

### 3.1 DSD technologies

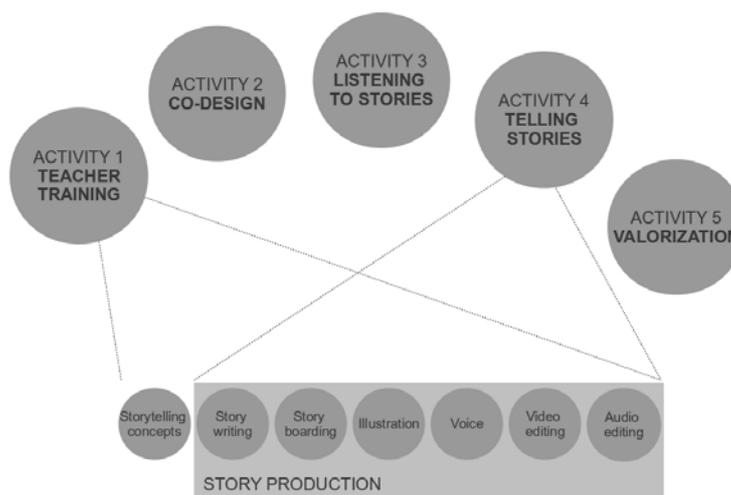
An important tenet in DSD is the decision to have a model that could be fully applied with free or open source technologies designed for standard education, excluding digital storytelling ad-hoc applications, or programs for children with special needs. This was done in order to favour integration and to provide opportunities for the development of real-world professional skills. After an extensive review of available applications, the Sant’Angelo project (and the other projects that followed) used the following free software applications:

- 1 any word processor, such as Open Office Writer
- 2 Audacity, an open source audio editing tool
- 3 ArtWeaver, a free image editing tool (but also GIMP!, an open source editor, could be used)
- 4 MS MovieMaker, a native but free Windows application for basic video editing (but Apple iMovie could also be used).

## 4 DSD in action

In theory, DSD activities are designed around four areas (storytelling, visual media, voice and digital media). In practice, DSD unfolds through five main activities (teacher training, collaborative planning, listening to stories, telling stories, valorisation; Figure 1), accompanied by a continuous evaluation effort. This section presents the four areas and five activities of DSD, illustrating them with the specific implementation choices made during the Sant’Angelo project.

**Figure 1** The five activities of DSD



#### 4.1 DSD areas of activity

DSD activities are designed along four main areas:

- **Storytelling:** the actual story development. As discussed above, the matter is fictional, while themes can be chosen either by teachers or students. In the Sant'Angelo project, teachers selected the overarching theme of the journey, in order to anchor the activities to specific curricular items, from Geography to the management of personal belongings. Approach to storytelling is aware and analytical for teachers, who learn to analyse narrative structures and get familiar with key concepts such as protagonist, inciting event, climax, culminating event, scenes and acts, etc., basically following the lines presented in McKee (1997). For activities with children, on the other hand, such level of conceptualisation is not required: under the guidance of teachers, children only have to intuitively perceive the main forms of good stories, and then work on their own stories.
- **Visual media:** the development of the visual part of the digital story. Most digital storytelling projects use photographs, usually personal pictures for biographical stories. As DSD is working with fiction, many different techniques can be used, including hand-drawing, watercolours, moulding paste, collages, etc. This opens the opportunity to select the techniques that better allow students to focus on their individual goals, and also to adapt to available materials. For example, in the Sant'Angelo project hand-drawing was used, in order to include training of fine-motor skills, which was a specific goal for many participants. Visualising a story means telling it once more in a different way than through words. Narrating with images is different from accompanying a story with pictures: it requires selecting different details (for example, the haircut of the protagonist, or the colours of some room), and understanding everything from a new point of view. While this is a good exercise for everybody, for vulnerable children it often means discovering a new way to give shape to emotions and ideas.
- **Voice and audio:** the use of one's own voice to tell the story, which is then recorded and mixed with music. Learning to use one's voice is of course a paramount goal for improving communication. Digital recording diminishes the stress of 'having to say it right', and also allows real-time replay of what has been recorded, fostering learning through self-evaluation. In the Sant'Angelo project, this included reading aloud activities, and choir rehearsal. Again, telling the story reading aloud, which is close to acting, requires a re-understanding of the whole text, focusing on single words and on the impact they have on the reader and the audience.
- **Digital media:** the use of digital tools to create a product that can be shared. This includes in particular editing the soundtrack, digitising and composing drawings, and editing the short movies. This is the opportunity to learn to use technologies, and to focus on the quality of the final product. In DSD, editing the video is another moment of re-telling the story, this time through the control of time and animations.

Following is a presentation of the five activities in which DSD is organised. They are here presented in a sequence, which follows a possible streamlined organisation of a DSD workshop. As discussed below, the five activities can be temporally rearranged in a

non-streamline fashion in order to fit specific project constraints. A practice-oriented guide of DSD, with a focus on the production steps, is available at Seed (n.d.).

### *Activity 1 Teacher training*

DSD teacher training consists basically in having adult participants go through the same process of digital storytelling that they will implement later on with children: story-writing, story-boarding, illustration, voice, audio editing, video editing. To this production process, two elements are added: an explicit introduction to the key concepts of storytelling, and reflective practice. Teachers are therefore introduced to the key concept of storytelling through the analysis of a few stories (usually folk tales and famous movies), and reflect on the key elements of a story structure (events and values, inciting and culminating events, character roles, etc.; see McKee, 1997) and on the process of giving meaning to experience through a fiction story. They then proceed to action: they select a character and develop a story, storyboard and illustrate it. Following, technologies come in: participants move on to record their voice and edit it, then mix it with music, digitise images and finally edit the short video. Pivoting between story and technologies is storyboarding, which is used as a road-map from the story to the video. Throughout the process, teachers are asked to reflect on the activities, and to improve their design for their specific setting. For example, teachers can be asked to reflect upon different patterns of stories before moving on to the creation of their own stories. In the same way, while being trained in hand-drawing skills, they can be asked to focus on the particular techniques that would help children with special needs, for example in the development of fine motor skills.

In the Sant'Angelo project, teacher training spanned over two months, with six sessions of four hours. Two sessions were dedicated to exploring narratives (what makes a good story? Why are stories sometimes boring and sometimes compelling? What is the relationship between stories and life? How do we learn from stories?), understanding narrative structures (acts and scenes, climax, etc.), and analysing different story media (text, text and images, audiotapes, video and movies). The remaining four sessions were dedicated to the story development, through which digital technologies were presented. Teachers were divided in two groups: one decided to work on a story told by one of the school's children, the other developed an original story from scratch. Both groups were limited to a maximum of five scenes, and produced three-minute stories.

Teachers are therefore the main participants of activity 1. Managers are involved in planning the training, and are also invited to participate in a few sessions, for example, when teachers present the subject of their story, or when presenting the final videos. Also, they are asked to announce to families and stakeholders that the project has started, in order to generate positive expectation.

### *Activity 2 Co-design (collaborative planning)*

Combining training and reflection is important in order to make teachers able to actively participate in co-design, and fine-tune project activities with children. DSD relies on the assumption that the model should be adapted each time to the specific characteristics and goals of participants, and to the constraints and opportunities of the situation. For this reason, the second activity in the method is co-design or collaborative planning, where teachers are asked to

- a identify general and individual learning goals for children;
- b devise a sequence of activities where each child can take part pursuing such goals;  
and
- c design the activities with children, including the final event, taking into account local constraints and resources.

Co-design creates engagement and ownership, and leads the team to define a goal challenging enough to sustain the whole project.

Co-design should not necessarily be a lengthy process: a few hours might be enough to develop or adapt the workshop plan with teachers and to let them get familiar with the underlying DSD principles. In the Sant'Angelo project, co-design took four hours plus individual preparation. A psychologist expert in special education was involved in order to help teachers identify individual learning goals for each child. Individual goals were varied, spanning from 'improve fine motor skills' to 'learn some topics in History'; other goals, such as 'learning to work together' or 'learning to plan ahead' were general and valid for all students. Seed staff helped teachers to identify meaningful pathways through DSD activities so that they became functional to the achievement of individual goals.

### *Activity 3      Listening to stories*

Activity 3 is when children start to get actively involved in the project. Teachers read some stories in class, and children are progressively led to understand basic narrative elements (characters, events, etc.) and to take up a more active role, expressing their preferences on scenes (what would you like to happen next?) and aspects of the stories (how do you like this character?).

In the Sant'Angelo project this activity was reduced to narrating a fairy tale and exploring different ending possibilities with children. This was the opportunity to propose them the storytelling work and to have them start to engage in fiction.

### *Activity 4      Telling stories*

Activity 4 is the core of DSD in terms of story development. During this activity teachers and children choose a common guiding *theme* for the further work and teams are formed, each assigned to the development of a single story. At Sant'Angelo, the overarching theme was the *journey*, and four groups were formed.

Teams of children start their work under the guidance of teachers, who support them through the same process they experienced in activity 1. The development process is the same described above (writing the story, illustrating the story, recording voice, mixing audio, digitising images, editing the video), similar to most storytelling approaches. During this activity, the flexibility of the method comes in the foreground: different groups or individuals within groups can carry out different activities, depending on their abilities and individual objectives.

During the Sant'Angelo project, activity 4 spanned over five months, with a two-hour DSD session every Friday and four two-hour debriefing sessions with teachers. Children were engaged in developing the stories of their 'virtual journeys' to different European countries, divided into mixed-class groups, according to competences and interests. Each group focused on a specific journey, such as *travel to the South* focusing on animals of the Savanna, *travel to the North* focusing on Scandinavian countries or *travel on a hot air*

*balloon* concentrating on maps and air view. One additional group decided to work on the soundtrack to accompany all stories, including folksongs from all ‘visited’ countries. The groups, each coordinated by one or two adults, worked in parallel, with moments of sharing stories, and keeping an eye on mutual aid: for example, the air balloon group provided graphic backgrounds for all other groups. Groups were formed with children from different classes. Cross-class collaboration, which was unusual in the common practice of the school, was perceived as a great added value of the project. Under this respect, technologies provided an opportunity to ‘think out of the box’ and somehow reinvent also interpersonal relationship between teachers and educators. The output was surprising: a DVD with over 20 minutes of animated digital stories, released along with an audio CD with the soundtrack of the project. But such output is only a surface indicator of the much richer outcomes of the project, which are discussed below.

### *Activity 5      Valorisation*

The final activity in DSD is at the same time the natural closure for the storytelling process and an opportunity to involve stakeholders to a lively learning event. This activity consists in preparing events – starting with a the *premiere* – where digital stories are showcased to a (large) audience, involving all school staff, families, friends, and local media. Of course, management sponsorship plays a key role in preparation and dissemination.

At Sant’Angelo, this event became the official end-of-the-year event. All families were invited to join, so that stories were screened in front of an audience of over 200 people. The event included a live show that presented the story and the theme of the journey. The adjunct school for professional cooks, which also hosts youth with disabilities, prepared a multicultural buffet, and guests had the opportunity to buy a DVD with the stories and a CD with the original soundtrack, thus supporting the school.

The communicative power of DSD projects does not end with the final event: digital stories can be burned on a DVD and used to present the school to sponsors and interested families, or can enrich the school’s website. DSD provides organisations with a tangible asset for institutional communication.

## **5 Evaluating DSD**

### *5.1 What to evaluate?*

Within DSD, reflective practice is central both in teachers training and at large for the whole workshop, and this is sustained through a continuing evaluation process, carried out to monitor activities and assess impact. Evaluating a digital storytelling workshop can be done at different levels. DSD defines four evaluation foci, leaving their implementation to each DSD project.

- 1 *Stories evaluation* (product evaluation) consists in evaluating the quality of the final products (i.e., the digital stories) *per se*, including
  - a topic and contents
  - b narrative power
  - c formal features.

We believe that, in a production workshop, the quality of the output is an indicator (though not the only one) of the overall quality of the learning that occurred. Such evaluation can be done by submitting stories to experts (expert review) or to other teachers with digital storytelling experience (peer review).

- 2 *Learning evaluation* (formative evaluation; Morrison et al., 2006) consists in evaluating the actual learning achievements of teachers and children. For teachers this can be done either through self-evaluation or through a formal test. For children, learning evaluation can be co-designed with teachers during phase 1, in order to be aligned with the practice and the needs of the organisation. It is paramount, in any case, that this evaluation is made against the general and individual learning goals determined for each child at the outset of the project.
- 3 *Process evaluation* (confirmative evaluation; Morrison et al., 2006) consists in data collection and analysis for improving the workshop design, and for identifying adequate follow-up activities in the same organisation. This includes participants' satisfaction, especially of teachers, and an analysis of efficiency (resources invested/outcomes).
- 4 *Organisational impact* (summative evaluation; Morrison et al., 2006), includes assessing project outcomes at an organisational level, also from the perspective of the organisational change process started and its management. This can be done through a briefing and debriefing with the school director at the outset and at the end of the project.

In order to illustrate the concrete outcomes of the evaluation process, the following paragraphs report examples from the Sant'Angelo project.

### 5.2 *Training and project evaluation*

Overall, teacher training received very high evaluations both in terms of formative (learning) and confirmative (process) evaluation. In particular, all areas of activity (storytelling, visual media, voice, and digital technologies) were assessed as relevant, and all teachers indicated a perception of high learning and transferability to class activities. But while explicit assessment (satisfaction questionnaire, interviews) reflected the satisfaction for reaching the end of the project and for learning, the data collected through observation allowed identifying more subtle but more important outcomes for teachers, children and the organisation.

### 5.3 *Measuring learning outcomes through observation*

Measuring learning outcomes is a challenge, as deep learning does not always result in explicit and immediate behavioural change. DSD is based on differentiation and on addressing individual needs by identifying individual learning paths. For this reason, direct structured observation seemed more adequate, even if the results are not subject to quantitative analyses. Observation carried out in the Sant'Angelo project aimed at documenting progresses made by children concerning

- a expressive skills
- b social abilities including group work

c project working skills.

Participant observation was carried out during four sessions by an external observer, a psychologist expert in special education. The data collected was then discussed with teachers.

In general children seemed to engage in the project much more than expected, activating previously untapped resources. The reasons that teachers could identify for this included the novelty of the proposal, the charm of technologies, but also the possibility to express feelings and values in a different way. Children clearly perceived that stories were for others, for a real audience: their parents, their friends, people outside the school. This apparently little thing represented a huge stimulus for these children, used to live within the walls of a special school, rarely relating to the outer world. The organisational dimension became a pedagogical driver.

This was particularly evident for the groups that recorded the soundtrack in a professional recording studio. Some children who barely opened their mouth during rehearsal, when confronted with a real microphone, instead of being frozen by shyness, just sung as good as they could. The opportunity of doing something about which to be proud was the definitive push for self-confidence and learning.

#### *5.4 New roles for teachers*

Teachers guided this un-tapping dynamic, and they enjoyed the opportunity of individualising learning paths that DSD provided. All different tasks were then integrated into the final product, which was everyone's product. This feature of individualisation with a common final output was highly appreciated and served as a reference model for future activities in the school.

One other element that did not appear in the original goals showed up during evaluation as a great added value. DSD provided an opportunity for teacher to work together, and to learn to do so beyond class schedules and routines. While teachers initially feared the more complex organisation required, they soon came to recognise it as one of the best outcomes of the project: the extra effort required for coordination was compensated by the discovery of rich peer interactions, and of the effective collaboration of more and less challenged children on common tasks.

#### *5.5 Organisational transformation*

Learning to work together was the most visible project outcome related to organisational change. Teachers started the project as individual class leaders, and ended it as a team.

At its outset, the Sant'Angelo project should have been a small pilot, but day after day the activities proposed were recognised as an important opportunity for teachers to reflect on their role, practices and relationships. From this perspective, educational technologies were the opportunity for unravelling old ideas and for starting a process of re-thinking at an organisational level, with the support of the director.

The outcomes of the project are stronger peer relationships and richer professional interactions, which result in the development of educational projects, in more interaction across classes, and in a more positive attitude towards change and innovation.

## 6 Adapting DSD

The previous sections presented DSD in general and through a sample illustrative project. The Sant'Angelo project could count on an extended time frame (a whole school year), excellent infrastructure (a Swiss special education school) and well-prepared teaching staff. DSD was implemented in a streamlined fashion (from activity 1 to activity 5) and the final event was also the end-of-school party.

Already during that project, seed staff members received invitations to elaborate educational projects in an international context. The request came from NGOs from Croatia, Mexico and Brazil, active in poor areas and with children from single-parent families. The main need expressed by these NGOs was to engage their children into reflection, helping them to channel their feelings and emotions into a positive working attitude instead of destructive impulses. Of course, these new projects would have a completely different setting than Sant'Angelo, at least concerning the time frame (reduced to one or two weeks), budget and available staff. This was an opportunity to verify the adaptability of DSD: if the same principles and activity structure would be flexible enough to fit the changing settings of international cooperation projects. This led to the planning and implementation of DSD workshops in 2009 and 2010 twice in Croatia, once in Mexico and once in Brazil. After that, a new school-year-long workshop was held at a primary school in Lugano, integrating four children with major disabilities from another special education institution.

These experiences confirmed the flexible structure of DSD, which is easily adaptable to different settings and constraints. The following paragraphs present four distinct ways to adapt DSD:

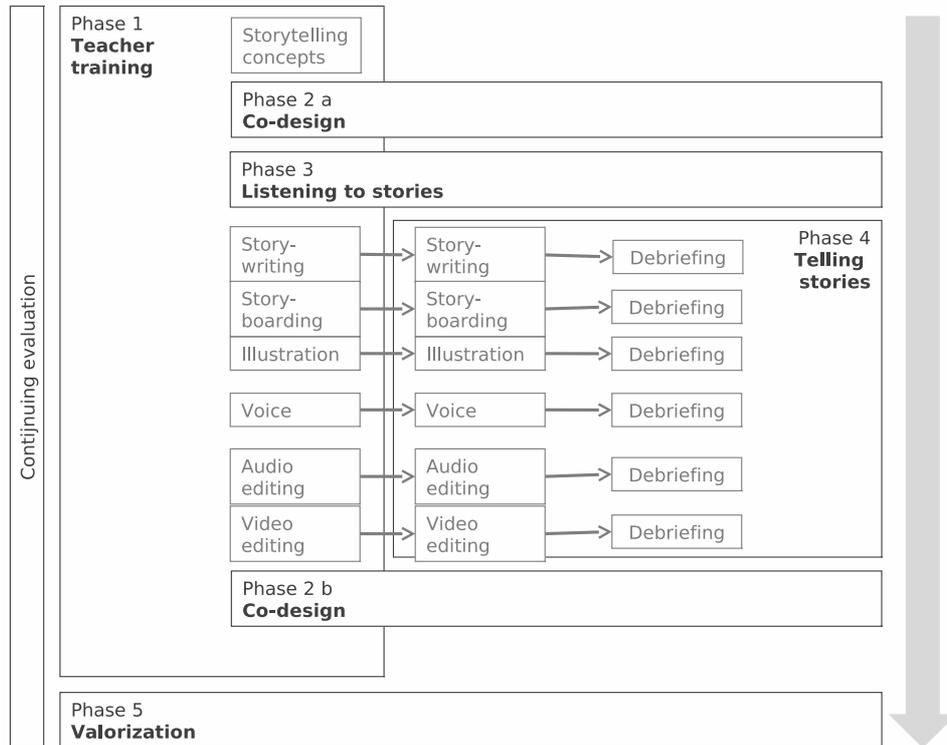
- a adjusting the time frame
- b promoting integration
- c pivoting on a single activity
- d exploring a theme.

### 6.1 *Adjusting the time frame*

The key element in the DSD method is the waterfall model: project staff members work with teachers, and teachers work with children, so that knowledge is actually transferred to the local teaching staff. The strategy for achieving this is having teachers work on storytelling *for themselves* in activity 1, that is, on a topic relevant to them and for the sake of their own professional development. In the Sant'Angelo project, the waterfall model was implemented through two distinct sequential phases: teacher training (lasting two months), and then children workshops (five months). When less time is available, the same principle can be applied by putting the two phases in parallel: for example, on day one teachers work on their stories in the morning, and then replicate the same tasks with children and their stories in the afternoon; on day two, teachers work on illustration on their stories in the morning, and then go through the same tasks with children and their stories in the afternoon; etc. This new format is more adequate for short intensive programs, as it avoids compacting the whole process in a few days, allowing participants for more assimilation time (see Figure 2). In this case, co-design takes place in regular

debriefing sessions (for example, at the end of every afternoon) and more strongly before activity 5.

**Figure 2** The DSD model with parallel scheduling of educators and children activities



The parallel activity structure requires more scaffolding on the project staff side, and has the drawback of not allowing teachers to see the full process before working with children, which generates uncertainty and potential anxiety. On the other hand, teachers have a direct ‘classroom proof’ of what they have learned just a few hours later. This approach was implemented in Croatia, where DSD was run with 12 educators and 20 children over four days, and in Mexico, with eight educators and 16 children, again in four days.

Another simple way to reduce time is preparing ready-made beginnings of stories for teachers, and having them prepare the same for children. In this way teams will not have to discuss about characters and settings, and will also adapt to the writing style of the proposed beginning. While apparently limiting creativity, this device provides clear boundaries to the activity, while not contradicting the principles behind DSD.

## 6.2 Promoting integration

In all of the DSD workshops conducted so far, integration was at stake: integrating children with special needs with children from the primary school, or integrating a new team of children or young people. Storytelling works for two reasons: first, creating a

(visual) story means expressing one's ideas and feelings, and therefore provides an open field for a safe discussion and for generating reciprocal knowledge; second, it requires so many different tasks and skills, that each child can find its own place in the process and in the final product, allowing also less gifted children to develop a sense of participation and ownership. Actually, this is a development of the idea of individual goals and paths through the activities discussed above.

During the second DSD project in Switzerland, four children with important disabilities were integrated with two classes of primary school. Special education children contributed to stories by painting backgrounds that were used for illustrations – although simple, backgrounds are essential to the final result, and all teams acknowledged the value of their contribution. On the other hand, possibly as a reflection for this interaction, many of the stories, developed by primary education children, told about the fear of meeting a 'stranger' (for example, a big seven-legged spider), which turned out to be a fundamental help in solving the story's challenge (the horrible spider helps the little girl to find what she needs).

### 6.3 *Pivoting on a single activity*

Each school, class and teacher have special inclinations, in terms of teaching or learning style (Felder and Silverman, 1988) or preference in selecting instructional foci (Posner and Rudnitsky, 2006). DSD acknowledges this and allows teachers to select how they will adapt the DSD workshop at design time, and students to select on what exactly to work during the workshop. As a consequence, tasks within activity 4 can be reduced (for example, providing ready-made puppets as main characters) or expanded (for example, recording live music and sound effects instead of using a soundtrack).

For example, teachers in Varazdin (Croatia) were used to work on artistic techniques, and therefore pivoted the whole workshop on illustration and animation, producing visually high quality products. On the other hand, teachers in Campeche (Mexico) decided to focus on content and writing, and invested in proposing targeted beginning of stories. This allows each workshop to be unique, and to maximise the resources available within the organisation, at the same time maximising the potential organisational impact.

### 6.4 *Exploring a theme*

Another way of adapting DSD is the theme of the stories. In general terms, an overall theme (saving the old dragon, the journey, etc.) can be used to provide consistency to the work of different groups. A relevant or 'difficult' theme can be chosen to use stories as a platform for discussion and learning. As we mentioned, telling a story is a mediated way to talk of things which would be difficult to tell directly.

This was the case in Mexico, where educators proposed *family* to be the overarching theme through the proposal of three beginnings for the stories that children then developed and completed. Indeed, the concepts of fatherhood, brotherhood, family love and forgiveness were represented and developed in children's stories, and this provided an opportunity to talk about these topics with children from disadvantaged and often broken families.

## **7 Conclusions and outlooks**

This paper presented the DSD model, a model for supporting the implementation of digital storytelling workshops within social and international development projects. DSD was developed over three years of field projects, and blends narrative techniques, visual arts and digital technologies for stimulating the development of expressive skills and team working. With respect to other digital storytelling methods and approaches, DSD focuses on fiction, provides great adaptability to different settings, and includes co-design and the involvement of external stakeholders in its design. The method was presented and illustrated through a sample project in special education. Adaptability features have been then introduced through short examples from other projects. So far, DSD was implemented in eight projects in five countries, and proved to be a useful tool to structure development projects involving groups of vulnerable children and their educators. Currently, DSD is included as Swiss contribution in the European project PINOKIO, funded under the Comenius Lifelong Learning Program, and two DSD projects are running during school year 2010/2011 in Switzerland, while one is planned in Brazil for the last term of 2011. This will provide new opportunities for the further application, revision and evaluation of DSD.

Future outlooks include the integration of new combinations of visual techniques (for example, integrating acting and video shooting, or advanced moulding techniques) and narrative styles. The principles underlying DSD – fostering expression and team-work – would also be applicable in adult education: the development of formative storytelling workshops for adults is under consideration, in particular addressing the development of professional identities and reflective practices in social work and education (Holmes and Marra, 2005).

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