Digital Storytelling as teaching methodology for special needs teachers: a case study

Marco di Furia[1], Piergiorgio Guarini[1] and Francesca Finestrone[1]

[1] *Learning Science Hub, University of Foggia, Arpi Street 176, Foggia, 71122, Italy*

Abstract

Digital Storytelling (DST), as a new teaching methodology, has encountered a lot of appreciation and good practices. For these reasons, in the planning of the laboratory of the Information and Communication Technology (ICT) in the framework of the training course for special needs teachers (TFA sostegno) at University of Foggia, our research team decided to invest time in studying the DST and then teach this methodology to the aspiring special needs teachers. The course was planned during the Covid-19 pandemic period, so it was designed specifically to be provided in a full digital learning environment. In the paper it is presented the design of the course, from the idea to the structure of it and its very administration during the course.

Keywords

Digital Storytelling; Special Needs Teachers; Teachers Training; Digital Methodologies.

1. The power of tales: from Homer to social media narratives

Storytelling has been used as a teaching medium since ancient times. As a powerful and evocative communication form, storytelling became an extraordinary way to educate masses on ethics and to define social standards and roles. European culture itself began with two crucial storytelling products: Homer's Iliad and Odyssey [1]. Epic tales and mythology of ancient times can be considered as a cultural sedimentation of voices and souls which talks to us from a distant past: millions of biographical stories correspond to a single myth, which is, as Jung believed [2], an archetypical and universal box for human experiences. In the past, preserving and spreading a story was very difficult, due to lack of cultural or material means, such as widespread literacy or telecommunications. Nonetheless, individual stories and dramas wanted to be told. The ἀοιδοί (*aoidoi*, "singers of epic poems") blended several stories together, enriching them with elements of everyday life and social structures, creating sagas with recurring characters. Homeric storytelling soon became a symbol of the entire Greek society, so much so that they are called a "tribal encyclopedia" [3], as well as representing the main broadcast channel for collective consciousness and education.

But stories have deeply changed over the centuries, along with the way they are told. First and foremost, contemporary tales are more numerous and more accessible: massive literacy and digital communication allow people to create their own stories and share them via the Internet with a potential audience of thousands of listeners and readers. We are able to transfer our entire life on digital platforms, "narratizing" it through photos, videos and digital texts that can be modified and deleted by us whenever we want: paraphrasing Gunther Kress [4], the world is configured by our stories, and *for* our stories; or at least, the digital one. Secondly, contemporary stories are more complex and unfixed, since they mostly are multimodal and digital. Thirdly, especially when shared on social media, storytelling tends to be ego-centered, autobiographical and personalized (*cfr.* Instagram or Facebook Stories, WhatsApp Status, *etc.*).

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EMAIL: marco.difuria@unifg.it (A. 1); piergiorgio.guarini@unifg.it (A. 2); francesca.finestrone@unifg.it (A. 3)
ORCID: 0000-0003-4772-4383 (A. 1); 0000-0002-7281-798X (A. 2); 0000-0003-4105-7911 (A. 3)

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Virtual identity is indeed a crucial aspect of modern society [5]. Individuals create more or less authentic copies of themselves and publish private content in narrative forms. Basically, social media users are storytellers of everyday life and digital narrators. Digital storytelling is supposedly more volatile than a classical poem; however, its power of emotional persuasion and transmission of notions on a large scale is enormous, in so far as popular social movements, like Greta Thunberg's protest about climate change, have spread thanks to social media narrations [6]. Therefore, it appears to be a perfect candidate among innovative methodologies available to today's teaching and training staff.

2. Digital Storytelling in Education

When it began to be tested, Digital Storytelling (DST) was not exactly conceived as a teaching methodology. It officially started with a workshop held by Dana Atchley in 1993; a Center for Digital Storytelling (CDS) was later established in Berkley, California (USA) [7]. The Center, still very active, has meanwhile renamed itself as StoryCenter, under the direction of its founder and coordinator, Joe Lambert [8]. According to Dana Atchley, who is commonly considered the founding father of DST, «...digital storytelling combines the best of two worlds: the 'new world' of digitized video, photography, and art, and the 'old world' of telling stories. This means the 'old world' of PowerPoint slides filled with bullet point statements will be replaced by a new world of examples via stories, accompanied by evocative images and sounds» [9].

Figure 1: A picture of Dana Atchley (1941-2000)

We can see that, since its beginning, DST has been presented as a creative and dynamic form of communication and expression of ideas. Its socio-educational impetus was soon noticed by major television broadcasters, such as BBC, which set a DST-based TV program up on its channel [5], and it is pretty clear that famous news providers (CNN, NBC, *etc.*) use multimedia storytelling on their websites [10]. Not only can DST be described as a revolution of journalism, but it can also become a turning point in teaching environments, especially in case of special educational needs, when communication and interaction are harder to manage. If ancient and modern masters chose to use storytelling to give their precious teachings, why shouldn't every teacher be able to?

2.1. DST in schools and universities

As mentioned above, one of the traditional purposes of storytelling is to teach an audience «a lesson or moral» [11]. Also, from AI theorist Roger Schank's point of view, storytelling is a mutual learning process: both the teller (*or* teacher) and the listener (*or* disciple) have something to learn from it [12]; which suggests that, considering DST as a teaching methodology, it has what it takes to be part of teacher training programs. Joe Lambert himself dedicated some paragraphs of his *Digital Storytelling* manual to concrete applications of DST in learning environments [13]. Since their first activities, Lambert and his collaborators practiced DST with educators from K-12 schools and people from

colleges and universities («Much of my work has been with educators themselves as my students») [13]. DST was immediately identified as an effective tool for project-based and individual-centered learning. Lambert even imagines «a student capping his or her educational career with an interactive performance of stories showing work on projects from kindergarten through college» [13], building a personal portfolio which tells about his or her academic history. DST also finds a positive application in professional evaluation, team building processes and technology training, all fundamental aspects of contemporary didactics. From a Deweyan perspective of education, Lambert remarks, DST inserts itself as a medium to foster social change, inclusiveness and peer-to-peer empathy; hence, telling personal histories and sharing feelings can have a great impact in reducing stigma, valorizing people with disabilities and helping people with special educational needs to express themselves better. Lambert, together with Professor Sue Schweik (Berkeley) and activist Neil Marcus, developed a DST path within the *Creative Writing and the Body* course. aiming to open instructive dialogues about disability and people's relationship with their own bodies [13].

The existence of very recent literature reviews about educational DST [14, 15, 16] shows that this innovative methodology internationally attracts scientific community interest, suggesting that the Coronavirus pandemic has awakened new reflections about this powerful tool [17]. DST, as every other form of loadable content, gives the possibility to remove the barriers of distance. During Covid-19 lockdown, a group of Indonesian researchers observed the use of Multilingual Digital Storytelling (MDST) to teach elementary school students English [18]. MDST proved to improve pupils' communication and language skills; teachers found MDST very helpful for young English learners. Similar encouraging results have been seen in another research about educational DST within an emergency and limiting framework [19]. Also, Lambert's StoryCenter has dedicated a whole section of its website to *Storytelling During the Pandemic*, stimulating online community-building and creating a database for "pandemic tales" [20].

2.2. DST experiences at the University of Foggia: workshops, projects, teacher training

Educational DST and media literacy have been a main research interest for several years at the University of Foggia: the ERID Lab, directed by Professor Pierpaolo Limone, hosted Joe Lambert in September 2013, during a series of seminars about multiliteracies [21]. ERID Lab has carried out several workshops and projects about the usage of DST in learning environments [22, 23, 24], testing it with school and university students:

Table 1
Most relevant workshops and projects about digital narrations coordinated by ERID Lab

Workshop	Participants	Approach
MediaEvo Mac Club (MMC)	24 high school students from Foggia and Lecce	*Semi-structured approach* Introduction to a story to be completed (character, historical frame, place)
Project - Decoding, understanding, producing texts and symbolic apparatus	15 elementary school teachers from Foggia	*Non-structured approach* Free choice of an autobiographical episode
ICT laboratory	25 university students from Foggia	*Non-structured approach* Free choice of an autobiographical episode
Project- Digital Storytelling as learning object	15 elementary and middle school teachers from Lecce	*Non-structured approach* Free choice of an autobiographical episode

Digital narrations laboratory - University of Foggia	10 university students from Foggia	*Non-structured approach* Free choice of an autobiographical episode
Digital narrations laboratory - University of Bari	10 university students from Bari	*Structured approach* Setting up a theoretical model to be used in building digital narrations
Project - Innovation of Italian language teaching: digital narrations	15 elementary and middle school teachers from Lecce	*Semi-structured approach* Introduction to a story to be completed (poetry, autobiographical text, *etc.*)

In the last few years, a DST workshop was carried out during the course of ICT (Information and Communications Technology) provided as part of the training course for the achievement of specialization in educational support activities for students with disabilities (commonly called *TFA support*), which provides for the achievement of 60 university credits and subsequent final examination and was introduced by DM (minister's decree) 249/10, Art. 13 concerning the definition of the requirements and methods of the initial training of teachers in kindergarten, primary and secondary schools, pursuant to article 2, paragraph 416, of Law 24 December 2007, n. 244.

The DST laboratory was prepared, administered and, at the state of the art, concluded, referring to the 6th ordinary cycle - 2020/2021, which consists of 1100 students and has led to the production of 109 videos of variable structure and quality, according to the digital skills and creativity of the participants. This lab took place in an online learning environment as part of the ICT course and constituted the final paper being evaluated; this setting allowed the students to explore new stimuli and meanings, and to experience the fascination of storytelling in a virtual environment, on a Zoom web platform.

3. Course planning

Once the modality of the course was set, the following step was to plan the content delivery program. As stated in paragraph 1, DST has specific characteristics, that need to be explained carefully and in the right order, otherwise the final result will not be congruent to the DST goals and aim.
The order chosen was the one provided by Jason Ohler [25], which consists of 5 phases:

Table 2
Jason Ohler 5 stages of Digital Storytelling (2013).

Ohler's 5 stages	Description
1. **Story planning**	Ideation, mapping and writing of the story; planning of a shared storyboard
2. **Pre-production**	List of media needed; production and/or research of media needed, first editing of raw media and creation of original media
3. **Production**	Audio, image and video editing, montaging, creative review of the final product
4. **Post-production**	Adding and combining transitions, effects, credits, texts, final review and file exportation
5. **Performance**	Sharing the stories in classroom and scholastic community, distribution of the stories outside the school

The course could not be planned just looking at the 5 phases, of course, but it had to be adapted to the time provided by the ICT laboratory, that was 9 lessons lasting about 2,5 hours.
For this reason, the final choice was to dedicate from 30 to 45 minutes to theorical part and explanation of what the students should then do in the practice part, which should last from 1 hour and 45 minutes to 2 hours.
Looking at the number of lessons, the choice was to divide some of the lessons into two or more parts, in order to give more time to the most complex parts of the DST creation process (storyboard and audio and video editing), because the students were not digital native and it was their very first attempt. with DST.
The final choice on the division of the lessons and the relative contents was the following:

1.	Introduction to DST	DST characteristics and communicative skills
2.	Story planning (1)	Creative writing
3.	Story planning (2)	Storyboard
4.	Pre-production (1)	Different type of camera shot sizes, how and when to use them
5.	Pre-production (2)	Modulation of the voice in narration; Audacity software of audio editing
6.	Pre-production (3)	Soundtrack: the importance of music in story telling
7.	Production (1)	Video shooting, audio recording and copyleft collection
8.	Production (2)	Video and audio final editing
9.	Post-production and performance	Final review and sharing in the classroom

As already mentioned, every lesson consisted of a theoretical and a practical part, which will be described in detail in the following paragraph.

4. Practical realization of the course

4.1. Creating stories

Biographical and autobiographical methods have been used in social sciences since the first years of 1990, with a consistent number of national and international researchers proposing empathic and biographical interviews as scientific tools, including Italian scholars [26, 27]. Storytelling characterizes the everyday life of each one of us. According to Bruner [28], narrative thinking is a crucial component of human intellect: it allows people to better understand themselves and empathize with their equals. Autobiography can be considered as a self-reflective storytelling which promotes personal awareness and self-empowerment, with interesting repercussions on student-teacher or peer-to-peer relationships. IC technologies and social networks provide students with new possibilities of autobiographical digital storytelling, communication and expression of identity: a chance that teacher training cannot miss, especially in the area of disability support, also considering that the 21% of students with special educational needs have been diagnosed with communication issues [29]. DST exercises have been used with specialization students within the DST laboratory, according to the following schedule:

1. detailed autobiographical writing about the first time by bicycle;
2. detailed autobiographical writing about the first episode of disobedience;
3. detailed, creative writing about personal feelings inspired by a random item, drawn by an interactive objects wheel; an alternative exercise consists in talking about a personal item, inherited by relatives, partners or friend;
4. detailed autobiographical writing about “places of our lives”; as shown below, the exercise intends to make participants recall their past and imagine their future, developing their narratives with evocative details, memories and personal ambitions;

Figure 2: Interactive wheel: an engaging tool used to inspire creative writing activities

The aim of these first exercises is to obtain raw material for digital storytelling products.

WHERE	CHILDHOOD	ADOLESCENCE	YOUTH	TODAY	TOMORROW
Foggia	I was born...				
Paris		I moved to...			

Figure 3: "Places of our lives" exercise

4.2. Making a storyboard

A storyboard is basically a sketched-out screenplay that is used in the movie industry. It helps storytellers to better manage the narrative development process, foresee and organize the scenes, calibrate the potential effects on the audience. According to *The Real Simple Guide to Creating a Digital Story* [13], there are seven steps to follow in designing a DST product; the third step is about *seeing* the story, which primarily means to visualize it through sketches to be transformed into audio-visual narratives. Specialization students were informed on storyboard functions and importance, and provided with instructions and examples in order to realize one, together with their team. Lambert defined storyboards as « (...) the process of visualizing how a movie, animation, or digital story will look. Storyboarding involves planning the sequence of scenes, transitions, and special effects, as well as the interaction of the incorporated media components. Students need to consider several components when sketching storyboards for a digital story; these include imagery (e.g., photos, art work, graphics, and maps), video, text, voiceover, audio (music and sounds), slide transitions, and image effects» [13]. Within the space of several meetings, our students built their storyboards, gradually adding more and more details concerning framing, soundtracks, visual effects, etc. The model used was the one provided by Jason Ohler [30], which is available on his personal website:

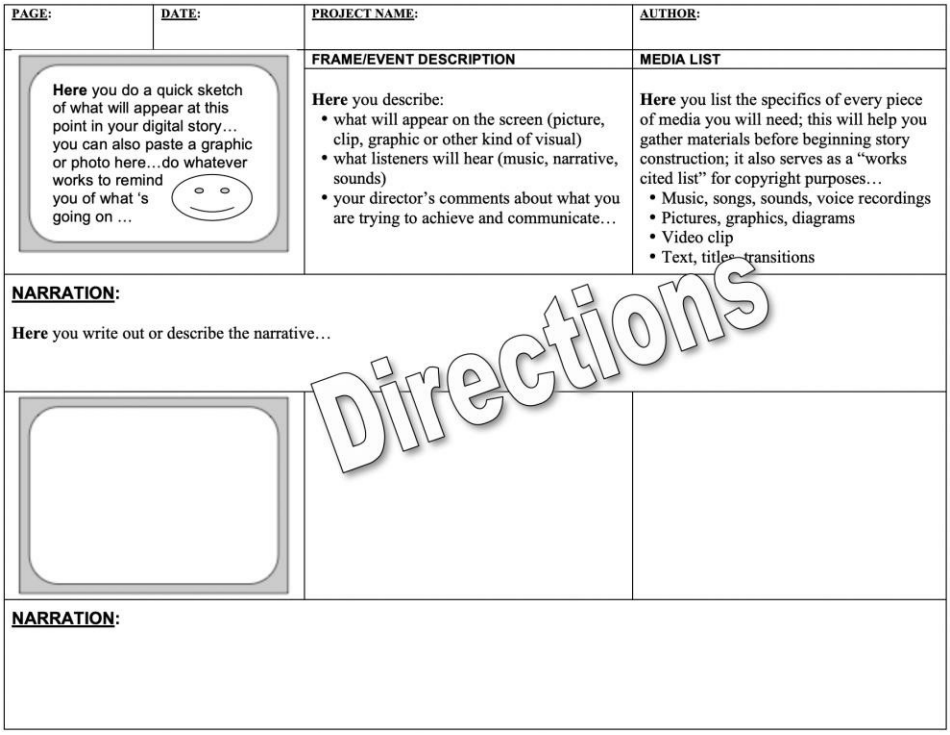

Figure 4: Ohler's Storyboard template

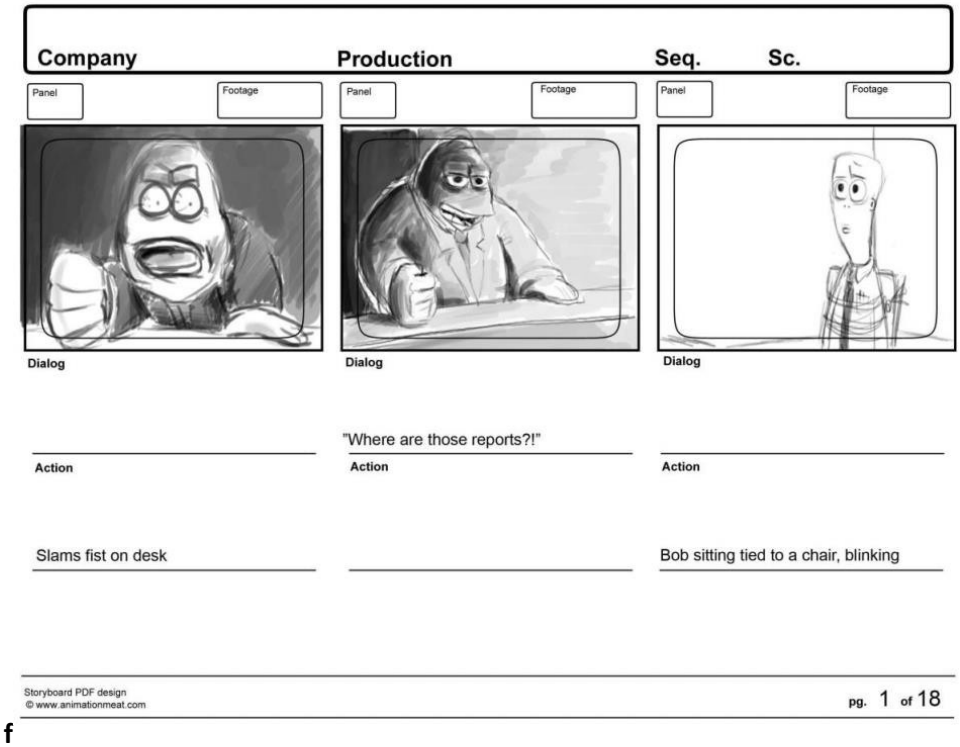

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Figure 5: A semi-filled Storyboard

From an educational point of view, designing a storyboard is an interesting and effective way to foster self-efficacy, together with several soft skills, such as time management, teamworking, problem solving

and task analysis. Also, the ability to plan an activity is a crucial step to reach self-regulated learning [31].

4.3 Pre-production (1): different type of camera shot sizes, how and when touse them

As people see in the movies or in every video content, the camera is almost never one size shot, but there are a lot of different shots. Of course, the choice of the shots it's never random: directors and producers decide what is the best shot in order to communicate the message of the scene in the best way.

There is no "right" camera shot size for any particular moment, but there are camera shots that work better than others to create a mood, feeling, and tone. Camera shot size can provide context for the viewer about character motivation, the theme of the movie, or show off the setting.

In the theoretical part of this lesson the students were provided with the presentation and explanation of what is the shot size, which is how much of the setting or subject is displayed within a given frame of a video, and all the different existing camera size shots. They are, from the widest to the closest [32]:

- Establishing Shot (ES): a shot at the head of the scene that clearly shows the location of the action. It helps to build tone and context;
- Extreme Wide Shot (EWS): also known as extreme long shot, it makes the subject appear small against the location. It is used to make the subject feel distant or unfamiliar;
- Wide Shot (WS): or Long Shot (LS), it balances the subject and the surrounding imagery. It will often keep the entire subject in frame while giving context to the environment. It should keep a good deal of space both above and below the subject;
- Full Shot (FS): it lets the subject fill the frame, head to toe, while still allowing some features of the scenery. It can be used to feature multiple characters in a single shot;
- Medium Wide Shot (MFS): or medium long shot, it frames the subject from roughly the knees up;
- Cowboy Shot (CS): it frames the subject from roughly mid-thighs up. The name refers to the western movies in which this shot was widely used;
- Medium Shot (MS): it frames from the waist up, so it emphasizes more of the subject while keeping the surroundings visible. It seems the most standard camera shot around;
- Medium closeup (MCU): it frames the subject from the chest up, including the shoulders. This shot favors the faces, but still keeps the subject somewhat distant;
- Closeup (CU): this shot is useful to reveal a subject's emotions and reactions. It fills your frame with a part of your subject. If your subject is a person, it is often their face; the close-up is perfect for moments that are important for the character. The close-up shot size is near enough to register tiny emotions, but not so close that we lose visibility. It is great for monologues too;
- Extreme Closeup (SCU): it fills the frame with your subject, and is so close that we can pick up tiny details that would otherwise be difficult to see. This camera shot size often shows eyes, gun triggers, and lips; sometimes SCU are shot with a macro lens for greater detail.

After the different camera shot sizes, it was shown to the participants the various elements (the graphicand the eventual text) and meanings of an image and how to use the elements in the images and the images themselves.

In the presentation it was shown the needed features that give effectiveness to an image and how they can be used.

The images can be used for: evocative suggestions, to show an emotion or feeling; conceptual metaphors (Fig. 6 and 7), to visualize abstract concepts; concrete examples about what you are talking about.

Figure 6: example of conceptual metaphor: a wood shaped like a human lung to show the danger of deforestation

Figure 7: example of conceptual metaphor: a boat alone in a calm see at sunset, to show feelings of peace and quiet

Then, it was shown to participants how to combine text and graphic in a single image in order to be ableto communicate the message in the best possible way.
What can be done to obtain such result? There are some things to keep in mind to do so:

1. Increase the contrast - between the colors of the graphic and the text;
2. Make the text part of the image - integrating the text in the boundaries of the elements of the graphic;
3. Integrate the text following the visual structure of the image – looking at the image flow, put the text where your eyes are attracted to;
4. Blur the background image – the text is the focal point;
5. Put the text in a box – when there is an image with a lot of colors;
6. Add text in the background – when there is a background with only one color;
7. Increase the size of the text – the size is the key element to attract the attention: bigger is better;
8. Add color – change the color of the text to stimulate visual interest;
9. Superimpose one or more colors on the original image – like the social network filters. The color(s) must be balanced with the image and there must be a good grade of transparency so the background image is still visible;
10. Less is more (simplicity) – too much filters and colors can distract attention from the text and the message. Use a simple style and an immediate image;
11. Use readable fonts – no squiggles font, don't use too much different fonts in the same image;
12. Optimize for any playback tool – the text must be readable on every screen: adapt the content to the communication tool there must be used.

After the theoretical part, it was given the group task to add the different camera shot sizes to the storyboard and decide where to put the descriptions, captions and or subtitles in the images, if they planned to put some textual parts.
The forecast of textual parts is not mandatory, but since this is a course to teach a didacticalmethodology to future special needs teachers, they should consider the possibility that their future student(s) can have hearing impairment and then need a visual texting support.
The students should now choose, looking at their storyboards, which shot size they will use for every scene they prevented, and mark it in the scene description.

After this activity, it was provided to the students the first tool of self-assessment about the progresses the various groups have made so far.
The tool is a chart that contains all stages of the DST creation set in Jason Ohler's order.
For every task, students must choose to mark if it has yet to begin, if it has been started but yet to finish,if it is completed or it is completed but should be reviewed.
Of course, since the laboratory is in its middle stage, there will be some stages that could not be started because the information about has not yet been provided.

This is not a problem, because this self-assessment chart is thought to be a tool to be used during all theDST creation process, in order to provide students with a tool to keep track of their progresses stage bystage. It is not provided an evaluation moment for this tool, because it is a tool the students should use independently.

4.4 Audacity

In order to introduce the students to the correct use of the voice, two videos of Italian actor Leonardo Losavio were shown, focusing on diction, the production and function of pauses and parentheses in speech, voice inflection techniques and techniques to emphasize the speaker's intentions. Second, a tutorial was shown on the use of the Audacity app, an audio editing software.

Figure 8: main screen

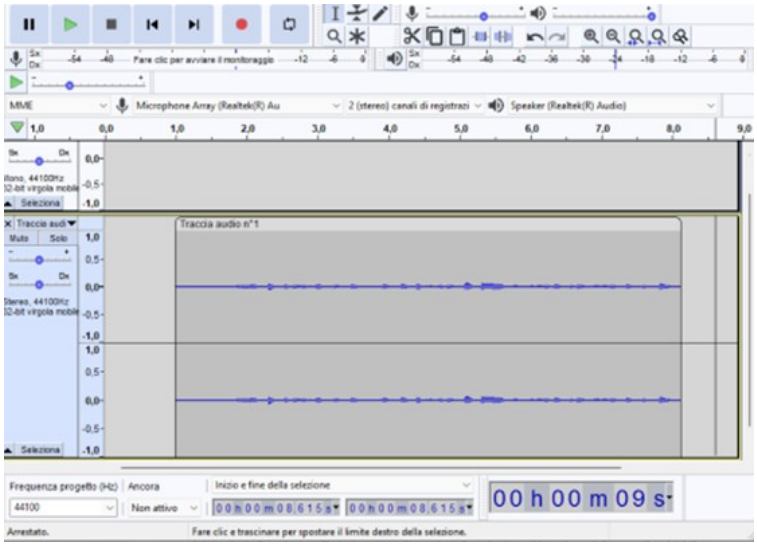

Figure 9: example of audio editing

In the second part of the lesson, two individual exercises were planned with the relative delivery: in thefirst, the students were asked to record 30 seconds of the reading of a passage, taken from a book or a newspaper sheet; in the second, the students inserted the music track as a background to the previous recording, applying the appropriate changes, as shown in the tutorial.

The remainder of the lesson was devoted to applying the knowledge gained on the storyboard, trying toreconcile one's aspirations for success with the demands of the screenplay.

4.5 Soundtrack

A fundamental and characterizing element is the choice of the perfect soundtrack. The first part of the lesson had a theoretical background, making a historical excursus of the technologies and innovations that have allowed the recording of music and synchronization with the images in scrolling. They reflected on the role and function of the composer, craftsman of sound, in history and, in particular, in the history of cinema. They highlighted the fundamental elements and steps for an effective soundtrackand for achieving synesthesia between visual and sound elements, emphasizing the need to give wordsto images.

To this end, segments of some masterpiece films were shown, whose soundtracks have deeply marked the collective imagination, the result of a fruitful composer/director partnership.

Figure 10: presentation cover

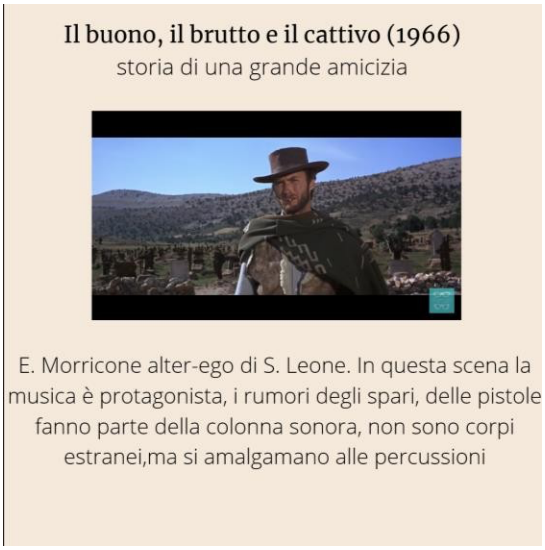

Figure 11: a slide of presentation

The second phase of the lesson, of a workshop nature, has provided for the vision, in the respective working groups, of the final scene of *La La Land* movie and the writing of a short story, conceived and inspired by the preferred audio tracks, identified in the proposed video. It is the music that creates the story, not the other way around. At the end of this exercise, the trainees used what they learned to enrich their storyboards.

Figure 12: a slide of presentation

4.6 Production (1): video shooting, audio recording and copyleft collection

This is the first stage of production, in which students have to produce original audio and video contentsor find and collect existing material, as long as it is copyleft, so it can be used and reproduced for free.Since this is a course provided online, of course this stage can be performed even outside class hours, so students can record and shoot whatever content they have decided and marked in the storyboard.

If students are not able to shoot and/or record original material, they can look for pre-produced materialthat fits the scenes they have imagined and wrote in the storyboard.
The students were provided with online repositories which contain copyleft material.

Table 3
List of copyleft repository

Audio	Images and Video	Images without background (PNG)
Find Sounds	Pikwizard	PNG EGG
Jamendo	Vecteezy	PNGtree
	Reshot	FreePNG.es
	Pixabav	Klipartz
	The Stocks	PNGWING
	Burst	Stick PNG
	Icons8	

Every website allows users to download materials for free. Once students shot, recorded or downloaded all the materials they need, the following stage is the editing.

4.7 Production (2): video and audio final editing

In **4.5** it has already been presented Audacity; the editing audio software that has been showed to students during the course.

In order to provide students with the necessary expertise to make the video editing and then add the audio track and possibly modify this last one according to the video, it was told them to download a specific app on their smartphones: InShot.

The reasons behind the choice of a mobile app instead of a computer app is explained looking at the digital devices available for teachers in Italian schools: before the pandemic, an average of 31% of Italian school principals stated that the lack and inadequacy of educational digital technologies in their schools prevent the supply of higher quality education to the students (OECD average is 25% [33]). Looking at this data, provide a mobile app downloadable on personal devices seemed the best option to make up for these structural problems.

Once that the decision was taken, there had to be decided which video editing app should be used. Thechoice fell on InShot after quick research among the most used video editing apps and after trying someof them.

InShot is a very intuitive app with a very simple interface. The basic version has a lot of tools to edit, cut, choose effects and filters that can be applied on the video. There is also the possibility to buy the premium version of the app, that unlock a lot of other tools.

The first task was to show students the different tools and possibility the app offers.

The lesson was organized showing students a recorded tutorial in which one person of the staff was explaining how to use InShot while showing the very use with the screen superimposed.

The video tutorial is available for consultation following this link **https://www.youtube.com/watch?v=5XGjIN9LZHY&ab_channel=CEACentroE-learningdiAteneo**

The first half of the lesson was dedicated to individual exercises, in order to let every student to try the app, and it was divided in three sections with three exercises:

Table 4

Setting of the lesson

1.	App download and clip upload	The students must download InShot on their devices and then shoot one or more clips that must be uploaded on the app
2.	Showing the first half of the tools	Students must use the tools and apply the effect shown
3.	Showing the second half of the tools and save the video	Students must use the tools and apply the effect shown, save the edited video

The second half of the lesson was dedicated to the group exercise, in which the groups have to decide the director's cut, the effects, the transitions between the scenes and everything they want to use and they have to write it all on the storyboard. It must be clear that the decisions they take are not final, they can be modified any time.

4.8 Discussion

In the last lesson of the ICT course the trainees shared the finished product reporting their experienceand making a final assessment of the DST workshop in terms of emotional involvement, skills, goalsachieved and motivation in order to replicate the activity in the school context with their students andfor their students, including those with special educational needs, for whom DST is a privileged tool. Overall, the trainees rated their course positively, reporting high levels of satisfaction and enthusiasmfor their work, highlighting the challenging possibilities.

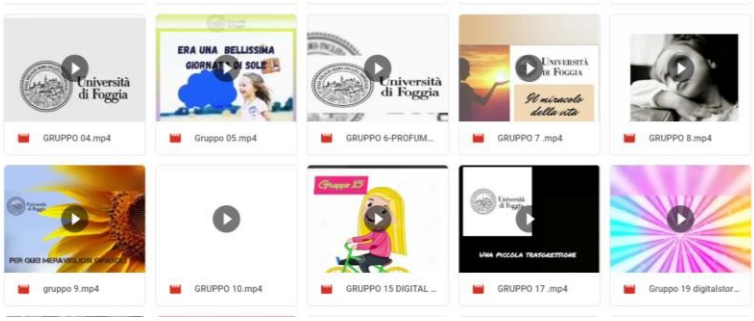

Figure 13: drive screen

5. CONCLUSIONS

Digital Storytelling is not only a way to tell something that happened to us. It can be a very didactic methodology to be used in classrooms, both with typical development children, both with atypical development children. The use of digital devices to plan the work and then express themselves can be very helpful rather thanthe frontal lesson in which students must stay sit and listen. DST expect to stimulate the students' creativity and let them learn by doing researchers and producing materials for the DST [34].

The students of this course, that are future special needs teachers, were enthusiastic about the course and the work done. They experiment fun while working on a serious task like learning a new didactic methodology, which they did not expect to. They enhanced their ability to work in team with people they have never met before, they learn new digital skills from scratch. They were kind afraid at the beginning of this course, and every time there was a new tool to teach, theyhad some resistances because they didn't believe they could be able to learn such "modern" digital tools.

Instead, as the explanations advanced, they became aware of the simplicity of the tools they were shownand find those very easy to use. Of course, some of the were more skilled and were able to master the digital tools in less time and someother needed a little more time, but they were all put in condition to make efforts and use the tools.

Even though there were more evaluation moment in every lesson, the team of exercisers could provideassessment to a very small number of people or groups. The moments of evaluation, however, were planned to be in plenary, in this way every student and all the groups could see good things and mistakesand self-assess their work. At the end of the course, every group of every grade has delivered its own DST and they have been collected on a dedicated section of University of Foggia account on Google Drive.

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