



***STORIES: foSTering early childhOod media liteRacy competencIES***  
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## **REPORT ON BEST EDUCATIONAL PRACTICES OF DIGITAL STORYTELLING IN EARLY CHILDHOOD EDUCATION AND CARE**

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<b>Keywords</b>	Best practice, digital storytelling, early childhood education and care
<b>Description</b>	This report aims to propose an approach to the integration of technology in the domain of ECEC by presenting best educational practices of DST implemented within STORIES Project in order to guide the practitioners.

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## 1. INTRODUCTION

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Today, educational researchers are in search of raising individuals who are adapted to the rapidly changing world. As a result of this search, good practice examples, as a demonstration of a qualified learning process, comes into prominence; teachers, administrators and educational researchers regard those practices as a guide to the adaptation of the education system to revolution. One of the areas of change that education has to adapt to is undoubtedly the rapid development in the field of technology.

In today's digital era, it is important to integrate the education process with new generation technologies. In this context, it has become more important for the children, who will form the society of the future, to offer educational services in harmony with the age they live in. Thus, the gap between the school environment, where access to technology is relatively limited, and the "outside" world, where mobile devices are used as a source of information access, will close. On the one hand, the effective use of technology has been suggested to have an important role to increase pupil motivation and engagement (Marks et al., 2013). As Gubacs (2004) stated, it would not be wrong to say that effective teaching in the modern era demands the integration of technology into classroom teachers' teaching because the ability to integrate technology into the learning and teaching process as a tool will not only help children in product development process, but also will serve as part of the teaching content or as a tool to help create an efficient teaching and learning environment (Moursund, 1999).

It is then important to focus on how technology can be adapted to learning-teaching processes and to establish best practices on how to integrate technology, especially in early childhood, to make new tech tools, toys, and creative ways available. However, the literature (DiPietro, et al. 2008; Hastie, Chen & Kuo, 2007; Thompson, 2014; Donohue, 2003) emphasizes that little is known about good practices related to teaching in online settings and emphasizes the uncertainty of how to use different forms of technology (i.e. on-line or off-line) in the classroom or how to develop best practices for digital applications in instructional design for children. Rubegni, Colombo & Landoni (2013) also stated that the questions like "What is the best way to introduce technology in schools? What are the most effective pedagogical approaches? What are the most successful teaching practices?" are yet to be answered.

Educational Opportunity Association (EOA)-National Best Practices Center (2018) defines "best educational practices" as the wide range of individual activities, policies, and programmatic approaches to achieve positive changes in student attitudes or academic behaviors. This term encompasses the following designations: promising, validated, and exemplary; which Arendale (2015) suggests that naming of each category can differ according to the content of the practice:

- Promising Education Practice; which contains detailed information describing the practice, along with its theoretical basis and guidance on how to implement it. Data collection is in process, but rigorous evaluation has not yet been completed.
- Validated Education Practice; which is a promising education practice, which has undergone rigorous evaluation that documents positive student outcomes in one education setting. The evaluation design could be experimental, quasi-experimental, qualitative, or mixed. A similar term used to describe this type of practice is evidence-based education practice.

- Exemplary Education Practice; which is a validated education practice that has been successfully replicated at multiple education settings with similar positive student outcomes. The Federal Department of Education describes this type of practice with the term scale-up, since the practice has high potential for successful implementation at other education sites.

Since the major aim of the STORIES Project is enhancing awareness in creative use of digital media and improving applicability of the digital storytelling (DST) as a proper pedagogical approach, methodology and learning model to effectively face opportunities and challenges of using media in early childhood education and care (ECEC); in other words, making the use of technology available in the domain of ECEC through the DST approach with regards to the dimensions of 1) fostering children's media literacy and 2) fostering teachers' ability to support it in the context of DST; those three stages mentioned above have been followed out in the STORIES Project implementation process.

At first, DST projects have been recognized as "promising education practices" to ensure the integration of technology into the teaching process and to develop multi-media skills in children, and the project implementation process is described in detail. After, positive results obtained on a class basis are handled in a detailed evaluation process and "validated education practices" are presented. Finally, similar projects have been carried out in different classes, applications with similar results have been reached and a framework of "exemplary education practices" has been presented. Besides, the STORIES Project can be considered a qualified example of implementation, provided that country-approved practices are reproduced in different countries (IT, TR, FI, and DE). In line with this characteristics of the STORIES Project, this report, aims to propose an approach to the integration of technology in the domain of ECE by presenting best educational practices of DST implemented within STORIES Project in order to guide the practitioners.

## 2. STATE OF ART

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### 2.1. Definition and Scope of a “Best Educational Practice”

Initially, the concept of “best practices” began to be used to clarify what we mean by qualified instruction. However, as the use of this concept has increased in all kinds of educational settings, the definition of the concept has become uncertain, becoming a ceremonial seal of approval. In fact, best practice has a long and distinguished pedigree and a deep base in the history and philosophy of education; this is a concept that manifests itself with limited and distinctive classroom practices (Daniels & Bizar, 2005).

In line with its conceptual definitions, the dictionaries defines the best practice as “*a working method or set of working methods that is officially accepted as being the best to use in a particular business or industry, usually described formally and in detail*” (Cambridge Advanced Learner's Dictionary & Thesaurus, 2018), “*a description of the best way of performing a particular activity, especially in business, that can be used by other people or companies as a set of rules to follow*” (Longman Dictionary of Contemporary English Online, 2018), or “*the best, most effective way to do something*” (McMillan Dictionary, 2018). In the field of education, on the other hand, this concept is used to mean: well-planned instructional strategies, techniques or activities that support successful steps in teacher's development (Soomro, Memon & Memon, 2016) or practical teaching techniques, tips, strategies and methods used to reach the program's successful learning outcomes (Perry, 2003). From the educational point of view, it can be argued that the concept then points to the work that offers a supportive roadmap for the practitioners, which defines the implementation process in detail. In this framework, best practices are thought to be related to key concepts such as qualified learning, a responsive learning environment, and student-centered education, because best practices are mainly based on how the learner learns and the need to create more sensitive learning environments (McGregor & Vogelsberg, 1998).

Today's learning spaces should be environments in which students would actively engage in learning activities, engage with materials, interact with ideas, talk to each other, and discover (Daniels & Bizar, 2005). Establishing a responsive structure which serves for the diversity of all learners' in the classroom, in which students actively participate in learning process, can be interpreted as the main purpose of the best practices. It would not be wrong to say that the structure of the best practices that motivate, engage and prompt students to learn and achieve (Public Schools of North Carolina, Department of Public Instruction: Elementary Division, n.d.) is a way of reaching learning environments where student-centered understanding is adopted. For this reason, one of the most frequently repeated concepts in studies on the properties of best practices is “student-centered learning” (Perry, 2003; Daniels & Bizar, 2005). However, every student-centered effort cannot be considered within the scope of best practice. The educational best practices are characterized by the following principles, assumptions, or theories by Zemelman, Daniels & Hyde (1998):

- Student-Centered. The best starting point for schooling is young people's interests; all across the curriculum investigating students' own questions should always take precedence over studying arbitrarily and distantly selected “content.”

- **Experiential.** Active, hands-on, concrete experience is the most powerful and natural form of learning. Students should be immersed in the most direct possible experience of the content of every subject.
- **Holistic.** Children learn best when they encounter whole ideas, events, and materials in purposeful contexts; not by studying subparts isolated from actual use.
- **Authentic.** Real, rich, complex ideas and materials are at the heart of the curriculum. Lessons or textbooks that water-down, control, or oversimplify content ultimately disempower students.
- **Expressive.** To fully engage ideas, construct meaning, and remember information, students must regularly employ the whole range of communicative media-speech, writing, drawing, poetry, dance, drama, music, movement, and visual arts.
- **Reflective.** Balancing the immersion in experience and expression must be opportunities for learners to reflect, debrief, and abstract from their experiences what they have felt and thought and learned.
- **Social.** Learning is always socially constructed and often interactional; teachers need to create classroom interactions that “scaffold” learning.
- **Collaborative.** Cooperative learning activities tap the social power of learning better than competitive and individualistic approaches.
- **Democratic.** The classroom is a model community; students learn that they live as citizens of the school.
- **Cognitive.** The most powerful learning comes when children develop true understandings of concepts through higher-order thinking associated with various fields of inquiry and through self-monitoring of their thinking.
- **Developmental.** Children grow through a series of definable but not rigid stages, and schooling should fit its activities to the developmental level of students.
- **Constructivist.** Children do not just receive content; in a very real sense, they recreate and reinvent every cognitive system they encounter, including language, literacy, and mathematics.
- **Challenging.** Students learn best when faced with genuine challenges, choices, and responsibility in their own learning.

In addition to the above, Daniels & Bizar (2005) states seven basic features of best practices:

- **Integrative Units.** It is necessary to bring students together with broad, realistic, interdisciplinary inquiries and to allow the thematic teaching in which student questions are centralized.
- **Small Group Activities.** The most meaningful learning experiences take place within group work. Learners need the experience of working with more groups. Collaborative structures must exist in the classroom environment.
- **Representing to Learn.** Students need to show their ideas and what they have learned through speaking, writing, drawing, dramatizing, singing and dancing.
- **Classroom Workshop.** It refers to transforming classes from the environment in which information is transmitted to laboratories where information is generated. This feature is based on the idea that students learn by doing. The students will search the related theme in certain periods of time, query the theme and evaluate the process. The teacher serves as an assistant coach; does not offer information, and the student focuses on producing work instead of listening.

- **Authentic Experience.** One of the ways to bring good practices into the classroom is authentic experiences. Good instruction makes student experiences concrete and real. The authentic experiences that put the student into real situations are also aimed at this.
- **Reflective Assessment.** Students should be given the opportunity to be aware of their own learning processes, to be able to organize their learning processes, to make decisions for the next steps, to self-assess and self-regulate.
- **Reading as Thinking.** Reading is a complicated process and a form of thinking at the same time. It is necessary to create an opportunity for the students to read with thought, to deeply understand what they read and to build a process of thinking on them.

These features, which are emphasized by different researchers as belonging to best practice, are characteristics compatible with constructivist understanding.

As stated in the *Manual Book of Best Practice about Digital Storytelling in Early Childhood* (2016) reported at the initial stages of STORIES Project; constructivism in education is rooted in notions from cognitive and social constructivism: the former is grounded in the work of Piaget and accentuates cognitive development and individual construction of knowledge; the latter emphasizes social construction of knowledge and is generally attributed to the work of Vygotsky. Another key contribution to constructivism in education is provided by Bruner. According to Bruner, important outcomes of learning include not just concepts, categories, and problem-solving procedures previously invented by culture, but also the ability to "invent" these things for oneself. Further to that, Brooks & Brooks (1999) specifies the guiding principles of constructivism as posing problems of emerging relevance to students, structuring learning around primary concepts, seeking and valuing students' points of view, adapting to curriculum to address students' sup positions, and assessing student learning in the context of teaching while defining the constructivist teacher as the person who encourages autonomy of the students', uses primary resources, designs tasks based on the use of high-level thinking skills, organizes activities according to student responses, permits students to express their understanding, allows students to interact with each other, and attach importance to questioning and reflection.

Marlowe and Page (2005) state that constructivist processes support the active participation of learners, the structuring of knowledge and deep learning. It encourages students on independent thinking and action and helps students to make permanent learning. In addition, transition to the student-centered constructivist education also forms the basis for educational reforms, encouraging students to become creative, independent, and problem-solving lifelong learners (Fok & Watkins, 2007). Best practices also support reformist attempts in the field. Because the cumulative results of more than one research made in different fields of education that focus on best practices lay the groundwork for reforms in the field of educational sciences (O'Sullivan, 2006). The constructivist approach meets the framework defined for best practices, with its structure and features allowing reforms to take place. Thus, it can be said that student-centered successful constructivist implementations appear to have the feature of best practices.

## **2.2. The Scope of Best Educational Practices of DST within STORIES Project**

Under the previous title, the features that best practices should have are discussed. When these characteristics are considered all together, a teaching practice can be regarded as a best practice, when it comprises reformist studies, such as providing constructive learning environments based on student-centered and active learning, involving group interaction and student participation, and integrating technology into the learning environment.

Alterio and McDrury (2003), Barrett (2005, 2006), and Boase (2013) state that digital storytelling facilitates the convergence of four student-centered learning strategies: (1) student engagement, (2) reflection for deep learning, (3) project-based learning, and (4) the effective integration of technology into instruction as having the potential to:

- Build and use technology/media skills
- Develop narration, literacy and media literacy skills
- Provide an alternative to written-based project work
- Stimulate critical-thinking
- Promote meaningful learning
- Enhance student engagement and motivation
- Enhance the learning experience

Since STORIES Project focuses on digital storytelling approach and practices, the implementations within this project can be considered as an initiative to build best practices, as it incorporates the strategies mentioned above.

On the other hand, project-based learning practice, as one of these strategies, which takes its roots from constructivism, offers the opportunity for effective use of technology in learning processes. In the relevant literature, as well, it has been suggested that educators could best use technology within a framework for technology-based teaching and learning that focuses on engagement (Goddard, 2002). In this context, an appropriate starting point for the implementation of this framework is project-based learning (Gubacs, 2004).

Project-based learning has long been a teaching tool and a powerful instructional approach that many teachers have been using with the integration of information technologies into this strategy. Beyond doubt, this path enables project-based learning to be more effective in terms of building deeper and meaningful learning (Lenz & Kingston, 2016; Moursund, 1999; Solomon, 2003). On the other hand, Hofer and Swan (2008) and Gubacs (2004) underlined the fact that the complexity and multi-layered challenge of designing and implementing any type of technology project in the classroom is not easy and this effective path will give the expected result only through a qualified implementation. At this point, digital storytelling emerges as a facilitating application as well as a useful way for the teachers to reach the goal of integrating technology effectively into their teaching. Yet, as pointed out by Piper (2000; cited by Michalski Hodges, & Banister, 2005), teachers need examples of best practices to begin using multiple instructional strategies and curricular innovations. From this point of view; STORIES project aims to create a qualified child-technology-learning triangle through digital storytelling projects and best practices have been examined closer. Within the scope of this report, best practices, which were selected by partner countries (IT, TR, FI, and DE) from digital storytelling projects implemented during STORIES Project lifetime, have been studied in detail in accordance with various criteria related to planning, implementation processes, and quality of developed

products. In this way, it has been tried to provide a roadmap to the practitioners during the design and implementation of technology-based projects.

As part of STORIES Project, this roadmap started with the planning process. Many researchers (Larmer, Mergendoller, & Boss, 2015; Boss & Krauss, 2014; Bell, 2010) also emphasize the importance of the planning process in project-based learning, indicating that careful planning is required for successful implementation. The planning process begins with the definition of the main goal of the project, the theme, the duration, the objectives, the instructional technologies, other resources and materials, and the teaching strategies/methods and techniques. Identifying appropriate goals, building teaching materials and contexts to support learning objectives are the first steps in an effective project-based instructional design (Barron et al., 1998). In this way, different development areas will be included in the objectives to establish a structure that will allow for interdisciplinary relations and thematic learning/theme-focused practices (Boss & Krauss, 2014; Krauss & Boss, 2013). Following this initial stage, the activity plan is designed. The activity plan includes the planning of introductory activities, the digital story-making process, and measurement and evaluation stages. Introductory activities are the part of the triggering events that will direct the thinking process. Krauss and Boss (2013) also point out that a good introduction to project-based teaching will provide a good starting point for questioning. As Bell (2010) states, in the beginning, children use organizers to isolate an inquiry question. They then brainstorm what their procedure will be for research and identify the materials that they will need to do this research. The next step is selecting a way to display what they have learned in the form of a project. In other words, after the introductory activities, children start to realize their projects in a process that takes place within a learning-centered understanding. Because the STORIES Project implemented digital narrative method in early childhood and aims at fostering children's media literacy skills, participant children used digital storytelling to demonstrate their learning and benefited from the guidance of their teachers. Since the selection of the technological tools to be used in this process is not a random decision and because the selected technologies will support the realization of goals (Boss & Krauss, 2014) and promote children's agency (Bell, 2010), in the activity plan, participant teachers were asked to explain the ICT tools and their usage process (the role of tools & apps in the current digital storytelling project, expected children's agency, skills, knowledge and understanding). And in the final stage, participant teachers were asked to explain the evaluation and assessment activities including dimensions of the experience to be observed and documented during implementation (children's skills, effectiveness of teaching practices, appropriateness of used technologies, etc.) and main evaluation criteria. After this planning phase, the participant teachers began to implement the digital storytelling projects with the children and noted all their activities through documentation for every step of the project. Accordingly, in this report, the projects selected as the best practices are explained in detail in terms of planning and implementation process, including the steps mentioned above to present examples of technology-based learning activities for pre-school children.

### 3. METHODOLOGY

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#### 3.1. Research Process

Within the scope of STORIES Project, teachers from partner countries (IT, TR, FI, and DE) implemented a series of three different digital storytelling projects with their group of children in the first cycle of implementation between January and June 2017, covering a time span of approximately five months. Following the first cycle, the second series of three more projects was implemented by the teachers during an approximately six-month-long period from September 2017 to March 2018 in the second cycle; that is, six project sheets altogether were filled in by each school/class/teacher from each participating country all through the STORIES Project's lifetime.

Taking into consideration a list of criteria, which was designated together with all the partners based on literature mentioned above and which cover dimensions related to the (1) individual characteristics of project implementation process, (2) individual characteristics of the products created by children and (3) composite items including characteristics of both process and product together, two projects were chosen as "best practices" by each country; from the perspective of project planning, implementation processes and the quality of the products developed. Each of the best practices selected were examined as a case study and the main features of these practices were presented as a demonstration of the common characteristics of qualified practices of DST in ECEC for the practitioners.

#### 3.2. Data Collection

The criteria considered for the selection of best practices are given below respectively:

##### *Elements regarding the project implementation process*

- Offering children a non-judging context
- Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)
- Intending adult's role as facilitator
- Conducting at least four sessions for the project activities
- Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process
- Consistency of the objectives with the teaching methods /educational strategies
- Children's active participation in the process of the story's construction
- Providing materials for children in a rich variety during introductory activities and digital story making process
- Supporting children's agency and active role in the community
- Supporting children's social competencies
- Children's participation in story's construction process as designers of each story's component
- Addressing one or more specific curricular objectives
- Arrangement of the experience space/learning environment effectively

- Including versatile ways of using technology
- Putting plenty of emphasis on the reflection of the process
- Children's participation in story's construction process as connectors of elements apparently distant

*Elements regarding the products created by children*

- Resulting in a coherent story in terms of story grammar
- Representing correlations of multimodal elements
- Taking into account the audience of a story

*Elements regarding both the project implementation process and products created by children*

- Combining digital and non-digital materials in a creative way
- Children's autonomous use of technologies
- Making use of the affordances of digital tools in an efficient way

Each best practice is supposed to match at least three elements regarding the process and two elements regarding the product. In line with the purpose, a total of ten best educational practices, consisting of two projects selected by each of the partners (IT, TR, FI, and DE), have been identified.

Following the best practice selection process, all the partners fulfilled a "Description Form", which asks for a detailed description of the objectives of the selected best educational practice, introductory activities performed, digital story making process, and digital products created as well as any kind of possible documentation embedded (i.e. the photos or short video records of the children during the activities, recorded/written expressions/sentences of children's on their drawings, other anecdotes by the teachers and researchers, the storyboards of the digital stories, the final multimedia story artefacts produced by children, etc.). The collected material has been explored in order to gather information on the following themes:

### 1. Descriptive Information

- Age level of children participated in the projects
- Classroom size (Number of children in the class)
- Number of project groups
- Number of children in each project group
- Duration of the projects
- Amount of sessions (Number of dedicated lessons)
- Aim/main goal of the projects
- Theme of the projects

### 2. Project Description

- Objectives and expected outcomes by the implementation of the projects
- Experience spaces
- Description of setting and arrangement
  - Physical classroom size
  - Indoor design (furnishing and equipment) of experience spaces
  - Arrangement of play areas/interest centers of experience spaces

- Arrangement of learning materials/resources/play objects in experience spaces
- Resources and materials used beyond digital devices
- Teaching methods and educational strategies
- Educational context
  - Project group make up
  - Project group selection criteria
  - Social dimension of the project group in the story creation process
  - Contextualization of the project

### 3. Project Activities

- Introductory activities
- Activities conducted during digital story making process
- Evaluation and assessment activities
- Use of digital technologies/tools/applications during each group of activities

### 4. Description of the Products/Stories Created

- Elements that triggered the stories
- Story starting points
- Amount of narrative structure provided
- Role of the teachers and strategies to develop the stories
  - Main role of the teacher
  - Main task performed by the teacher
  - Phases of the story development
- Type of narratives
- Story structure categories and level of story grammar development
- Visual elements of the stories
  - Product types
  - Production ways of embedded drawings/pictures
- Voicing elements in the stories
- Soundtrack in the stories
- Technological tools and applications employed in children's digital stories according to product types
- User interface employed in the final products

The description forms fulfilled by each partner for the selected best practices are given in Appendix I-IV. With this structure, it is thought that this form will function as a content that directly embodies the case studies with any kind of embedded documentation under each possible title.

### 3.3. Data Analysis

In the analysis of STORIES best educational practices, the analysis for the process and product-related data was both quantitative and qualitative. Based on the nature of the data, quantitative descriptive analysis based on frequencies was used to describe the data obtained from closed-ended items included in the description form and qualitative descriptive analysis was used to summarize the data gathered through open-ended items.

## 4. FINDINGS

### 4.1. Main Features of Best Educational Practices of DST in terms of Selection Criteria

Below, the main features of the selected best educational practices are presented within the criteria considered in relation to the project implementation process in Table 1.

**Table 1.** Criteria regarding the project implementation process

<b>Elements regarding the process</b>	<b>f</b>
Offering children a non-judging context	10
Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)	10
Intending adult's role as facilitator	9
Conducting at least four sessions for the project activities	9
Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process	8
Consistency of the objectives with the teaching methods /educational strategies	7
Children's active participation in the process of the story's construction	7
Providing materials for children in a rich variety during introductory activities and digital story making process	6
Supporting children's agency and active role in the community	5
Supporting children's social competencies	5
Children's participation in story's construction process as designers of each story's component	5
Addressing one or more specific curricular objectives	4
Arrangement of the experience space/learning environment effectively	2
Including versatile ways of using technology	2
Putting plenty of emphasis on the reflection of the process	2
Children's participation in story's construction process as connectors of elements apparently distant	2

Findings have shown that there are two common criteria in all selected best practices; "offering children a non-judging context" and "meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)". This shows that in the storytelling process, encouraging children to make their own choices/decisions, thus providing them with a nonjudgmental learning environment and leading children in meeting at least an adequate level of developmental taxonomy for the acquisition of story grammar skills leads to the realization of more qualified digital storytelling practices that can be referred as "best practice".

The following process-related criteria considered for the selection of best practices with the highest frequency (f=9) are, namely, “intending adult’s role as facilitator” and “conducting at least four sessions for the project”. Another highest frequency (f=8) across the criteria used to select best practices has been observed in “consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process”, whereas “consistency of the objectives with the teaching methods/educational strategies” and “children’s active participation in the process of the story’s construction” have been found to be considered for the selection of seven best practices (f=7). “Providing materials for children in a rich variety during introductory activities and digital story making process” has also appeared to be another mostly considered criterion (f=6) for the selection of best practices. In addition, half of the selected projects (f=5) have been found to match the criteria of “supporting children’s agency and active role in the community”, “supporting children’s social competencies” and “children’s participation in story’s construction process as designers of each story’s component”.

In addition to the above features, it is observed that the criteria of “addressing one or more specific curricular objectives” (f=4), “arrangement of the experience space/learning environment effectively”, “including versatile ways of using technology”, “putting plenty of emphasis on the reflection of the process”, and “children’s participation in story’s construction process as connectors of elements apparently distant” are the least considered elements for selection of best practices (f=2). The fact that criteria emphasizing inclusion of versatile ways of using technology and children’s being connectors of elements apparently distant are less considered can be attributed to the fact that participant children are still in early childhood. However, arrangement of the experience space/learning environment effectively and especially the reflection of the process are important dimensions in the projects. It is thought that the low percentages observed regarding these criteria in best practices selection process may be due to the fact that teachers did not include these features in their project plans.

Besides, the main features of the selected best educational practices within the criteria considered in relation to the products created by children are presented in Table 2.

**Table 2.** Criteria regarding the products created by children

<b>Elements regarding the product</b>	<b>f</b>
Resulting in a coherent story in terms of story grammar	7
Representing correlations of multimodal elements	4
Taking into account the audience of the story	2

When the best practices are examined in terms of product-based selection criteria, it is seen that the most common met (f=7) product-based criterion is project’s “resulting in a coherent story in terms of story grammar”, which indicates a meaningful flow in the construction of the narrative in terms of understandability and harmony. “Representing correlations of multimodal elements”, which is a component of media literacy skills and involves using different communicative modes (e.g. verbal, visual, sound, tactile) has been found to be met in four of the selected projects (f=4). Since this criterion is thought to be requiring a higher level of understanding when compared with the age level of participant children and when the findings from the analysis of “Yearly Project Summaries”, partaking in the *STORIES Report on Scientific Research* taken into consideration, which mention that improvement has only observed in lower levels of this skill

(i.e. being aware of differences between the properties that different modes offer), representing indicators of understanding multimodality is expected to become a more favorable criterion as children grow older.

The least met product-based criterion, on the other hand, is appeared to be "taking into account the audience of the story". It is thought, since the main purpose of STORIES Project is to use DST as an approach in the learning process of children, it is not surprising that the digital stories created by children are exactly based on their own preferences, not the audience's.

The findings with regards to the criteria regarding both process-based and product-based selection criteria are presented in Table 3.

**Table 3.** Criteria regarding both the project implementation process and products created by children

<b>Elements Regarding both the Process and the Product</b>	<b>f</b>
Combining digital and non-digital materials in a creative way	8
Children's autonomous use of technologies	6
Making use of the affordances of digital tools in an efficient way	5

The findings showed that the most common met (f=8) criterion under this title is "combining digital and non-digital materials in a creative way". It is obvious that a qualified digital story, combining digital and non-digital materials in a creative way, encourages both digital technologies to have a meaningful place in the life of the child, as well as allowing the child to use his/her creativity. In a sense, combining digital and non-digital materials in a creative way can be accepted as an indicator of children's ability to combine the materials in their surroundings with digital materials, thus an evidence of their realization of the learning process by starting from their own experiences. Autonomous use of technology by children in the DST process and products (f=6) and making use of affordances of digital tools in an efficient way (f=5) are also appeared to be important; on this respect it can be said that the projects in which the amount of support provided by the teachers in use of technology is less and in which children use technologies autonomously in an efficient way are mostly regarded as best practices.

#### **4.2. Main Features of Best Educational Practices of DST in terms of Implementation Process and Quality of the Products**

Of the projects implemented during two consecutive academic years, ten projects were selected as best practices, four of which were held in the 2016-2017 academic year and six of which were held in the 2017-2018 academic year. The selected projects have been examined in detail under four titles focusing on "Descriptive Information", "Project Description", "Project Activities" and "Description of the Stories Created" regarding the implementation process and products. The findings are presented below under different subheadings, respectively.

##### **4.2.1. Descriptive Information**

Under the first title, namely "Descriptive Information", age level of children participated in the projects which are selected as best practices, the classroom size, in terms of total number of children in the class in which digital storytelling projects selected as best practices were implemented, and the number of project groups which participated in these projects is examined and presented in Table 4, Table 5 and Table 6.

**Table 4.** Age of children

<b>Age of Children</b>	<b>f</b>
36-72 Months (3-4-5 Years)	1
48-60 Months (4 Years)	2
48-72 Months (4-5 Years)	4
60-72 Months (5 Years)	1
72-84 months (6 Years)	2
Total	10

**Table 5.** Classroom size (Number of children in the class)

<b>Classroom Size</b>	<b>f</b>
6 children	2
10 children	1
16 children	1
17 children	1
22 children	2
24 children	2
46 children	1
Total	10

**Table 6.** Number of project groups

<b>Number of Project Groups</b>	<b>f</b>
Single group	5
Two groups	2
Four groups	1
Five groups	2
Total	10

Based on the descriptive findings presented above, it has been determined that the majority of the projects selected as best practices were conducted with children in the range of 48-72 months (4-5 years) (f=4); the total number of children (classroom members) involved in the classes in which these projects are conducted varies between 6-46; and the number of small workgroups constituted within the class changed between 1-5. The number of projects carried out with a single group (f=5) is more than the number of projects carried out by more than one working group. Two of the projects selected as the best practice were conducted with two groups and the other two projects were conducted with five groups, whereas, digital story creation process was carried out with four small groups of children in only one project. However, when the number of children in each project group is examined, the range is found out to be 3-7.

The duration of the projects selected as best practices and the amount of sessions (number of dedicated lessons) to implement the relevant projects is presented in Table 7 and Table 8, respectively.

**Table 7.** Duration of the projects

<b>Duration of the Project</b>	<b>f</b>
2-3 Weeks	3
1 Month	4
2 Months	1
6 Months	2
Total	10

**Table 8.** Amount of sessions (Number of dedicated lessons)

<b>Amount of Sessions</b>	<b>f</b>
3-4 Sessions/Lessons	1
5-6 Sessions/Lessons	4
7-8 Sessions/Lessons	2
9-12 Sessions/Lessons	2
Not Explicitly Mentioned	1
Total	10

It is seen that; the majority of the projects (f=4) were carried out in a duration of one month, and within 5-6 sessions/lessons (f=4). Findings obtained by examining the main goals of the selected projects are presented in Table 9.

**Table 9.** Aim/main goal of the projects

<b>Aim/Main Goal of the Project</b>	<b>f</b>
To promote narrative/language/expressive skills	9
To enhance social and collaborative skills	8
To develop technological competencies	6
To reach the objective of the educational program	2
To foster imaginary and creative ability	1

When Table 9 is examined; it is observed that almost in all of the projects (f=9), which focus on various themes such as fairy tale, family, friendship, magic, adventure, vegetables and fruits, nature, color, or sports, the main goal of the project is to develop narrative/language/expressive skills. In the context of these skills; enforcing children in terms of narrative awareness, learning and practicing media literacy, expressing what they hear and see in various ways, use of voice appropriately, explaining visual materials, or creating compositions such as a plot or story using visual materials were found out as some of the specific aims mentioned under this category of skills.

It is also found out that enhancing social and cooperative skills were frequently adopted as the main goal in the projects (f=8). In this context; making the children experience their self-efficacy, increasing the stamina in the children, making children create stories by starting from elements strongly connected to their experiences (their daily life in preschool), fostering children's capacity to create a story collaboratively in small groups, or enforcing peer collaboration were found out as some of the specific aims mentioned under this category of skills.

Developing technological competencies were found out to be adopted as the main goal in six of the projects (f=6). With regards to this category; fostering children’s capacity to transform and to elaborate such elements by using digital tools, making children use the tablet in order to tell a story, making children explore digital tools, fostering the construction of digital skills, understanding movie making, or transforming a fairytale into a film were found out as some of the specific aims mentioned.

Besides, it is determined that reaching the objectives of the national educational programs (f=2) and fostering imaginary and creative abilities (f=1) are also adopted as the main goal in the projects along with relatively lower frequencies compared to the other categories. Details of the main goal of the projects are given under the following title, within the objectives and expected outcomes.

#### 4.2.2. Project Description

Under this title, the initial particular interest was on the objectives and expected outcomes of each selected project. However, since some of the objectives and expected outcomes of the projects which are essential to this interest have their origins in the national educational programs of each partner country, the findings are summarized briefly in Table 10 and the detailed objectives and expected outcomes are presented in the Appendix I-IV to introduce a holistic perspective to the practitioners.

**Table 10.** Objectives and expected outcomes by the implementation of the projects

Aim/Main Goal of the Project	Objectives and Expected Outcomes
To promote narrative/language/ expressive skills	<ul style="list-style-type: none"> <li>• Reaches narrative awareness</li> <li>• Learns and practices media literacy</li> <li>• Expresses what s/he hears and sees in various ways</li> <li>• Names the source of a sound</li> <li>• Names the characteristics of a sound</li> <li>• Makes sound similar to the sound s/he hears</li> <li>• Uses voice appropriately</li> <li>• Examines/explains visual materials</li> <li>• Asks/answers questions about visual materials</li> <li>• Creates compositions such as a plot or story using visual materials</li> </ul>
To enhance social and collaborative skills	<ul style="list-style-type: none"> <li>• Experiences his/her self-efficacy</li> <li>• Reinforces his/her stamina</li> <li>• Creates stories by starting from elements strongly connected to his/her daily experiences</li> <li>• Creates a story collaboratively in small groups</li> <li>• Does peer collaboration</li> <li>• Motivates himself/herself to achieve a task</li> <li>• Expresses his/her feelings with gestures and mimics</li> <li>• Names his/her physical characteristics</li> <li>• Names his/her main affective characteristics</li> <li>• Talks about the distinct roles of individuals within a society</li> <li>• Talks about distinct roles of the same person</li> </ul>
To develop technological competencies	<ul style="list-style-type: none"> <li>• Explores digital tools</li> <li>• Transforms and to elaborates such elements by using digital tools</li> <li>• Uses the tablet in order to tell a story</li> <li>• Constructs digital skills</li> <li>• Understands movie making</li> <li>• Transforms a fairytale into a film</li> </ul>

To reach the cognitive development objectives of the national educational program	<ul style="list-style-type: none"> <li>• Builds cause and effect relations</li> <li>• Recognizes diversities in sounds (e.g. loudness, pitch, etc.)</li> <li>• Groups objects according to size</li> <li>• Groups objects according to tactual characteristics</li> </ul>
To reach the motor development objectives of the national educational program	<ul style="list-style-type: none"> <li>• Does fine motor movements</li> <li>• Does specific movements requiring hand and eye coordination</li> <li>• Attaches/detaches objects</li> <li>• Uses tools requiring manual skills</li> <li>• Combines objects to create new shapes</li> <li>• Bounces on one foot/two feet</li> </ul>
To foster imaginary and creative ability	<ul style="list-style-type: none"> <li>• Expresses himself/herself in creative ways</li> <li>• Brings out novel products</li> </ul>

The following focus was on experiences spaces, thus, findings regarding the spaces used during the implementation of the projects is presented in Table 11, based on frequencies.

**Table 11.** Experience spaces

<b>Experience Space</b>	<b>f</b>
Classroom	7
School Garden	5
Classroom's Digital Corner	4
Atelier	3
Teachers' Room	2
Out of School Space	2
Digital Laboratory	1
Other	3

In the implementation of the activities, it was determined that the basic learning environment was the classroom (f=7), while the technology corner in the classroom was also found to be frequently used for the digital storytelling activities (f=4). The school garden (f=5) and the ateliers (f=3) were also found to be used especially for the introductory activities of the projects. It has also been observed that the teachers' room and the out-of-school areas such as forests and museums (f=2) have been used as well as the various fields such as the digital laboratory (f=1), and infirmary, science laboratory and workshop room, which are mentioned under the "other" category (f=3), as an experience space for the project activities.

With regards to the description of setting and arrangement, four different items were examined; these are (1) the classroom size, in terms of physical field size, (2) indoor design, in terms of furnishing and equipment, (3) arrangement of play areas/interest centers, and (4) arrangement of learning materials/resources/play objects.

It is found out that four of the classrooms are at medium size and three of them are large spaces, whereas for three of the experience spaces in which project activities were held, the researchers could not have been able to report the physical size or other properties of the spaces because of not having a chance to visit and observe the project activities on site. Therefore, Table 12, Table 13 and Table 14 presented below include a brief summary of the descriptions on indoor design,

arrangement of play areas and learning materials within categories drawn from the reported characteristics of experience spaces, in which the activities of selected best practices were held.

**Table 12.** Indoor design (furnishing and equipment) of experience spaces

<b>Indoor Design</b>	<b>f</b>
Offers natural light	7
Offers colored and comfortable furnishings transparency as to create spaces where connections are encouraged and children’s development is supported	5
Offers entry hall, corridors, kitchens and gathering spaces designed optimally to give each corners of the school an identity and a specific purpose	4
Offers walls interpreted as spaces where documentation can be displayed, as to invite people to gain a better understanding of what happens in the school	4
Offers sufficient space for the children to work comfortably/individually/collaboratively	3
Offers sufficient number of places for storing and presenting children’s activity materials and products	2
Offers suitable height of cabinets and wardrobes which housed the activity materials for access by children	2
Offers sufficient heating, ventilation systems and a healthy flooring	2

**Table 13.** Arrangement of play areas/interest centers of experience spaces

<b>Arrangement of Play Areas/Interest Centers</b>	<b>f</b>
Offers a gathering space (square) located in a central position where the classrooms are connected, allowing children to freely move between the square, the classroom and the atelier throughout the day	4
Offers separated interest centers (dramatic play center, block center, reading center, manipulative center, mobile learning center, art center) to support students’ development	1

**Table 14.** Arrangement of learning materials/resources/play objects in experience spaces

<b>Arrangement of Learning Materials/Resources/Play Objects</b>	<b>f</b>
Offers a free access to the play objects/Offers play objects clearly visible to children	6
Offers unstructured objects, brought by families allowing children to explore and give to such objects new meanings through symbolic play	4
Offers stimulating play objects, carefully selected to foster cognitive development (providing children with opportunities to classify, find relationships, measure, compare, match, sort, label, etc.) of children	1

It can be said that well-planned environments were offered to children almost in half of the projects in accordance with the findings presented above; besides, offering well-designed experience spaces, which supports children’s cooperating, communicating, sharing, and working together or individually, occurs as important elements in best practices.

Table 15 shows the findings on resources and materials used beyond digital devices throughout the selected project activities.

**Table 15.** Resources and materials used beyond digital devices

<b>Resources and Materials</b>	<b>f</b>
Drawing and Painting Materials	10
Photos/Images	8
Objects from Nature	7
Real World Objects	7
Structured or Unstructured Articles from the Physical Environment	6
Books/Journals	5
Concrete Play Objects	4
Musical Instruments	1
3D Models	1

The findings on resources and materials used beyond digital devices showed that, drawing and painting materials (i.e. paper, colored pencil, crayon, cardboard, scissors, glue, tape, water-color paint, and markers) were used in all of the projects (f=10); photos/images (i.e. theme-related posters and photos, film posters, short movies or digital stories prepared by the teachers, and visuals for optical illusion experiment) were used in eight projects (f=8); objects from nature (i.e. seeds of different plants, potted plants, nuts, and snow) and real world objects (i.e. costumes, clay, match, film reel, helmet, and a pair of skis) were used in seven projects (f=7) whereas articles from physical environment (i.e. pieces of soap, popsicle sticks, fishing line, felt fabric, reused materials such as cans) were used in six projects (f=6). In addition to this, illustrated or silent children books [i.e. *Planting a Rainbow* by Lois Ehlert, *Mi papa estuvo en la selva (My Dad was in the Jungle)* by Anne Decis, *Curious George Plants A Seed* by H.A. Rey and Sandra Willard, *Tohumun Rüyası (The Dream of a Seed)* by Sahar Bardaie and Nalan Özdemir Eren, *The Giving Tree* by Shel Silverstein, *The Cow Who Climbed a Tree* by Gemma Merino, *The Tiny Seed* by Eric Carle, *Der Baum der Jahreszeiten (Tree in Seasons)* by Stephen Gately, *In The Forest* by Marie Hall Ets, *Stuck* by Oliver Jeffers, *Nature's Day* by Kay Maguire, and *Meraklı Minik Dergisi (Journal of Curious Puppy)* by TÜBİTAK] are found to be used in five projects (f=5). Concrete play objects (i.e. play dough, small toy characters representing ski jumpers, LEGOs, and finger puppets), on the other hand, were used in four projects (f=4). A rain stick as a musical instrument and 3D models [i.e. musculoskeletal model, organ models (ear, heart, etc.), and fruit models] are found to be used in only one project (f=1).

The distribution of the teaching methods and educational strategies used by teachers among selected best practices is presented in Table 16.

**Table 16.** Teaching methods and educational strategies

<b>Teaching Method and Educational Strategy</b>	<b>f</b>
Digital Storytelling	10
Cooperative Learning	10
Questioning	8
Discussion	7
Brainstorming	7
Site Visit/Observation	6
Project-Based Learning	6
Narration	5
Demonstration	4
Educational Play	3
Role Playing/Drama	2
Direct Instruction	2
Experiment	2
Gallery Walk	2
Problem Solving	1

In the context of teaching methods and educational strategies used by teachers, it is observed that DST and cooperative learning were used as a teaching method in all of the best practices (f=10) based on the main scope and nature of STORIES Project, and questioning, discussion, and brainstorming were determined as the other the most frequently used teaching methods/strategies. On the other hand, although project-based learning is widely emphasized in the literature as an effective teaching tool and a powerful instructional approach that offers the opportunity for effective use of technology in learning processes, this method has been found out to be used only in six of the best practices (f=6) due to the fact that some projects were performed as performance tasks in a relatively small number of sessions and that teachers therefore identified “digital storytelling” as the main method instead of project based learning.

Regarding educational context, four items are taken into consideration, namely, (1) project group make up, (2) project group selection criteria, (3) social dimension of the project group in the story creation process and (4) contextualization of the project. Findings from each item are presented below, respectively.

**Table 17.** Project group make up

<b>Project Group Make Up</b>	<b>f</b>
Homogenous	1
Heterogeneous	8
Not Explicitly Mentioned or Ambiguous	1
Total	10

**Table 18.** Project group selection criteria

<b>Project Group Selection Criterion</b>	<b>f</b>
Language/Expression/Narrative Skills	5
Age	5
Children's Own Choice	4
Interests	3
Social Skills	2
Kindergarten Attendance in the Previous Years	2
Previous Working Group Membership	2
Gender	1
Academic Skills	1
No Selection Criteria/Whole Group Attendance	1

**Table 19.** Social dimension of the project group in the story creation process

<b>Social Dimension of the Project Group</b>	<b>f</b>
Small Group-Work in the Whole Process of Story Creation	7
Alternation of Social Dimensions	3
Total	10

**Table 20.** Contextualization of the project

<b>Contextualization of the Project</b>	<b>f</b>
Familiarity to Narration	9
Familiarity to Technologies	8
Familiarity to DST	5

The relevant tables demonstrated that most of the selected projects were conducted with heterogeneous working groups and it was observed that language/expression/narrative skills and age variables were considered most in terms of group formation criteria. It is seen that small-group work in the whole process of story creation is the main social dimension of the group among the projects selected as best practices. Alternation of social dimensions was also observed in three of the projects. In one of these projects, it is stated that in the initial stage, the children were given three keywords and invented individual stories they told the whole group. Afterwards, the children developed a story together and every child recorded the story using a storyboard. During the making of the digital story, the whole group worked together and the children took on different roles. Another alternation has been specified with familiarization with storytelling in pairs with the aid of the "story crafting" method, before the process; however it is mentioned that most of the actual process was conducted in a small group. Occasions involving all the children in the whole group, where some children were in more active roles based on voluntary choices, while others participated in crowd scenes, were also reported. As stated above, the contextualization of the project in terms of connection to ongoing or recently completed learning activities, children's previous experience and familiarity to narration, technologies and digital storytelling is also examined and findings showed that participant children in selected projects have experience in terms of narration and the use of technologies,

and in half of selected projects children have found to be already participated in the activities in the direction of digital storytelling approach.

**4.2.3. Project Activities**

Under this title, the focus is the details of (1) introductory activities, (2) the activities conducted during digital story making process, and (3) evaluation and assessment activities in terms of both their content and the use of technological tools and applications in terms of the hardware and software used by the teachers and children on an individual basis for each group of activity. All these mentioned details essential to the relevant focus is presented in Appendix I-IV within description forms reported by each partner, to offer practitioners a holistic and thematic perspective.

**4.2.4. Description of the Digital Stories Created**

Under the title of “Description of the Digital Stories Created”, elements that triggered the stories are the first topic interested. The findings are presented below.

**Table 21.** Elements that triggered the stories

<b>Elements that Triggered the Story</b>	<b>f</b>
Circle time activities	6
Telling stories	6
Presenting children real world objects or objects from nature	5
Site visit/observation	5
Presenting children critical/background/initial information	5
Presenting children visual or auditory elements	4
2D/3D material production with children	4
Presenting children concrete play objects	3
Educational plays	3
Role play/drama/puppet show/stage play	3
Experiential activities	3
Drawing/painting activities	3
Reading/presenting story books/3-D books/silent books	2
Presenting children digital stories created by teachers	2
Gallery walk	1
Meeting specialists	1

From the point of view of elements that triggered the stories, it is seen that the activities and materials in the forefront observed in the projects with the highest frequency are; the circle time activities conducted with open ended questions, discussion, analogy, etc., telling stories, presenting children real world objects such as fruits, vegetables, clothes, kitchenware, etc. and objects from nature such as pinecones, leaves, stone, etc., site visit/observation and presenting children critical/background/initial information such as technological expertise and theme-content-core information.

Along with these, presenting children visual (photos, pictures, cartoon, documentary, movie, etc.) or auditory elements (songs, sound effects, i.e. animal sound, etc.), 2D/3D material production with children (puppet, animal shelter, poster, booklet, model house, costumes, etc.),

presenting children concrete play objects (kinesthetic sand, toys, cardboard box, Cubetto, etc.), educational plays, role play/drama/puppet show/stage play activities, experiential activities, drawing/painting activities, reading/presenting story books/3-D books/silent books, and presenting children digital stories created by teachers have come to the fore as an activity or material that gives variety and add richness to the elements that trigger the stories. Gallery walk and meeting specialists, on the other hand, are confronted as elements that triggered the stories only in one of the projects.

Story starting point, which demonstrates if the development of the digital story started from an initial children’s or teachers’ prompt, was another focus regarding the description of the digital stories created by children within the selected projects. Table 22 presented below represents the findings.

**Table 22.** Story starting point

<b>Story Starting Point</b>	<b>f</b>
Stimuli for original construction	4
Children’s play scripts	4
Children’s narratives	2
<b>Total</b>	<b>10</b>

It can be seen from Table 22 that “stimuli for original construction”, in which the teacher provided a verbal/visual/tangible/multimodal stem, introducing one/some story element/s (e.g. a single picture, or a set of pictures such as story dice, flash cards, or a sequence of related pictures such as silent book, photo album, a verbal content stem such as a starting sentence, tangible objects - either natural or artificial such as toys, dolls, puppets, bricks, figures, shapes, etc. to be used as characters or as setting elements, teacher’s recall of shared memories such as oral telling of past experiences, maybe showing pictures or conversational elicitation procedure such as telling a story to get a story, i.e. providing a story model) and “children’s play scripts”, in which the narrative incipit has been drawn upon children's play (e.g. acting/role playing, manipulating tangible objects and imbuing them with personalities or free use of any kind of digital device such as camera, tablet, I-Theater, etc.) appear to be the most common story starting point among the selected practices (f=4). In two of the projects, the narrative incipit has been found to be extracted from personal/conversational or visual narratives of children (f=2). Although stimuli for story retelling, in which the teacher provided a complete story as a starting point (e.g. improvising, or reciting, or reading a story, reading and showing an illustrated book, showing a silent book or showing a movie, or cartoon) was as another story starting point among all the projects implemented throughout the STORIES Project’s lifetime; this type of story starting point has not been observed among the projects selected as best practices.

The findings obtained with regards to another focus, that’s the amount of narrative structure provided to children in story creation process is presented in Table 23.

**Table 23.** Amount of narrative structure provided

<b>Amount of narrative structure provided</b>	<b>f</b>
No structure	6
The child is given a topic and is asked to tell a story	2
Medium amount of structure	2
Total	10

Findings have revealed that most of the digital stories created by children (f=6) have no structure, showing that the child chooses the topic and formulates a narrative. The stories created in accordance with a given topic and asking children to tell a story and the stories created with a medium amount of structure for which the child is given one or more potential story characters, a physical setting, and possibly an event have also been observed in two of the selected projects (f=2). Although the stories created by way of giving children a starting prompt containing the setting, characters, and an initiating event and asking them to complete the story or created by way of telling a story to children and asking them to reformulate that story were observed types regarding the amount of narrative structure provided among all the projects implemented throughout the STORIES Project's lifetime; these types of amounts have not been observed among the projects selected as best practices.

The role of the teacher and strategies to develop the story has been examined under two sub-titles, namely "main role of the teacher" and "main task performed by the teacher". The findings are presented in Table 24 and Table 25 given below.

**Table 24.** Main role of the teacher

<b>Main Role of the Teacher</b>	<b>f</b>
Facilitator	9
Guide	3
Instructor	2

**Table 25.** Main task performed by the teacher

<b>Main Task Performed by the Teacher</b>	<b>f</b>
Supervise the children during activities	10
Use guiding questions	8
Before, prepare the environment and the materials	7
Help consistency in the use of technologies	7
Non-judgmental attitude	5
Observe children during activities	3
Write the children story and read to children	2

With regards to the role of the teacher and strategies to develop the story, findings have revealed that the teachers mainly act as facilitators during the project implementation and product creation process. In accordance with this main role, main task performed by the

teachers are commonly characterized as to supervise the children during activities in all of the projects selected as best practices. Using guiding questions (f=7), preparing the environment and the materials before the project activities (f=7), and helping consistency in the use of technologies (f=7) have also been defined as prominent items in most of the projects in terms of the main task performed. Being observed in half of the selected projects (f=5), exhibiting a non-judgmental attitude during the project activities is also regarded as another important task performed by the teachers.

Examining the phases of the story development and the type of the narratives composed by children has revealed the findings in Table 26 and Table 27, presented below respectively.

**Table 26.** Phases of the story development

<b>Phases of the Story Development</b>	<b>f</b>
Verbal-Visual-Technology	6
Visual-Verbal-Technology	3
Play with Characters-Technology	1
Contemporary	1

**Table 27.** Type of narrative

<b>Type of Narrative</b>	<b>f</b>
Fiction/Make-Believe Story	9
Script	1
Total	10

As it is seen from Table 26 and Table 27, development of most of the stories (f=6) have followed the phases of verbal-visual-technology while the consecutive phases of visual-verbal-technology (f=3), consecutive phases of playing with characters-technology (f=1), and performing all the phases contemporaneously (f=1) have been observed in fewer projects relatively. Within the context of these different phases of story development, it is found out that nine of the stories were fiction/make-believe stories in terms of narrative type (f=9), out of one narrated as a script (f=1). Findings obtained focusing on the story structure category and level of story grammar development is presented in Table 28.

**Table 28.** Story structure category and level of story grammar development

<b>Story Structure Category</b>	<b>Level of Story Grammar Development</b>	<b>f</b>
No-structure sequence	Unrelated Statements	-
	Descriptive Sequence	-
Descriptive-action sequence	Action sequence	-
	Reactive sequence	3
Goal-directed sequence	Abbreviated Sequence	-
	Complete Episode	7
	Complex Episode	-
Total	Interactive Episode	-
		10

It is seen that most of the stories (f=7) was structured in the category of goal-directed sequence and in the level of complete episode in terms of story grammar development level, while the remained three stories were structured in the category and story grammar level of reactive sequence (f=3).

The findings with regards to the product types and the production way of embedded drawings or pictures are presented in Table 29.

**Table 29.** Product type and the production way of embedded drawings/pictures

Product Type	Production Way of Embedded Drawings/Pictures			Total (f)
	By Hand (f)	By Using Digital Tools (f)	By Using Both Ways (f)	
Animation	5	-	-	5
Still-image sequence	-	1	1	2
Animated slideshow	1	-	1	2
Mixed	1	-	-	1
Total	7	1	1	10

With regards to visual elements of the stories, the product type and the production way of embedded drawings/pictures are cross-examined and the findings showed that half of the stories (f=5) were animations (both cartoon and stop motion and screencast, i.e. the output of iTheatre, or any kind of app running on PC/Tablet/Smartphone employed for “live” or “delayed” animation, or screen recording such as Puppet Pals, Camtasia, MonkeyJam, etc.) produced by hand, while two of them were produced by using digital tools or by using both ways as still-images (any kind of slideshow without animations such as storybook, photo/illustrated album, PowerPoint presentation, etc.), and another two of them were produced by hand or by using both ways again as animated slideshows. There is also one story produced in a mixed format (e.g. the output of Book Creator, embedding both still image sequences and video clips) which was produced by hand.

In addition to the findings presented above, the product types of the stories were also examined according to the technological tools and applications employed in children’s digital stories. Table 30 represents the relevant findings.

**Table 30.** Technological tools and applications employed in children’s digital stories according to product types

Product Type	Technology Used by Children		Technology Used by Teachers	
	Hardware	Software	Hardware	Software
Still-image sequence	Tablet Digital Pen	Drawing Pad App Google Chrome Microsoft PowerPoint	Computer	iMovie Microsoft PowerPoint
Animated slideshow	Tablet	Google Chrome Microsoft PowerPoint Chatter Pix Kids App	Computer	Microsoft PowerPoint Chatter Pix Kids App

Product Type	Technology Used by Children		Technology Used by Teachers	
	Hardware	Software	Hardware	Software
Animation	Tablet	Stop Motion App iMovie iTheatre	Tablet Smartphone Computer	Stop Motion App iMovie Video Recording App Video Cutting Software
Mixed	Tablet	Video Recording App iMovie	Tablet	Video Recording App iMovie

When Table 29 and 30 are examined together, developing products in the form of animation is observed to be the most obvious way used by children to get creative products, as well as increasing the motivation of children in terms of the richness of the media components they contain. This is a feature that contributes to making the products more qualified.

Based on the technologies used by teachers and children, it has been determined that user interface employed in four of the digital stories was “graphical user interface”; in all of these four digital stories, the relevant interface was used by teachers while in two of these four products children were also the user with the teachers. It has also been observed that, children tend to use tablets with “touch user interface” frequently as hardware among the others; this interface was used for the creation of five digital stories both by teachers and children. The tangible user interface, on the other hand, appears to be used only by children, thus it has become one of the most convenient interface for children's autonomous use as well as the touch user interface.

In addition to all these, voicing has been found to be sufficiently understandable in three of the final products (f=3), while the remaining seven products was clearly understandable in terms of voicing (f=7). In the context of soundtrack, mood music and diegetic music played or performed by children was observed in each one of the projects (f=1), while seven digital stories have appeared to have sound effects (f=7).

## 5. CONCLUSION

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In the context of the common features of the initiatives undertaken by the STORIES Project, starting from the selected digital storytelling projects and children's relevant products referred as best educational practices; it has been aimed to define basic principles that will throw light on the road map for the practitioners in the process of developing and implementing a successful DST project in ECE within this Report. In line with this effort, a holistic assessment on the results has been presented below at first; then, taking into consideration the properties of best educational practices emphasized in the relevant literature and common properties drawn from the analysis of selected best educational practices of STORIES Project, a synthesis of the main features of best educational practices of DST in ECE has been presented for practitioners.

### 5.1. A Holistic Assessment on the Results

When the selection criteria considered as important to refer a DST project as a “best practice” in ECEC within the STORIES Project are examined, it seems that the emphasis is mostly on the role of teacher as offering children a non-judging context, as a facilitator and as a regulator in conducting at least four consecutive theme-related sessions for the project activities, as well as acting as a promoter who leads children in meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence) in story making process. As also mentioned in the *Manual Book of Best Practice about Digital Storytelling in Early Childhood* (2016) reported at the initial stages of STORIES Project, making up coherent stories means activating knowledge and using materials to build new narrative sequences. This process allows children to acquire new knowledge about the world and/or to consolidate the knowledge they already have. Moreover, it enables them to acquire or consolidate their skills (digital and narrative) through action, which is termed as “learning by discovery” (as compared to mechanical learning) by Ausubel (2000). This not only gives the child opportunity to gain different experiences with rich material support, but also gives attention to children’s active participation and autonomy. This emphasis brings to mind the concept of constructivist learning. In addition to this, it is seen that the main goals of the projects are also important in the best practice selection process. Attaining products related to the objectives of the project implementation process, and the compatibility of the main goals and the teaching methods and techniques used also appeared to be among the most selected criteria. This points out that a DST project in ECEC is not just a technology-driven approach to product development; the fact that the construction of the product making process is designed in accordance with the objectives also affects the quality of a DST project.

The overall findings have resulted in supporting the fact that, as well as being crucial in any kind of learning process (Brooks & Brooks, 1999; Marlowe and Page, 2005; Fok & Watkins, 2007), it is also important to provide a constructivist learning environment in the process of development a DST project in ECEC. It is clear, based on the results, that supportive environments rich in teaching-learning methods and materials, in which the teacher has a facilitator role and the learners have an active participant role will not only suggest a rich learning experience in ECE (Berris & Miller, 2011; Brewer, 2004; Loebach, 2004; Nuikinen, 2011; Rentzou, 2014; Taylor, 2009) but also will provide more autonomy to the child both in the storytelling process and in the use of technology, which is a must-fulfilled requirement in order for products to be child

stories rather than teacher stories. It should not be forgotten in the process of digital story creation that both narrating skills, including story grammar development phases, and skills of integrating these narratives with the technology should be equally emphasized, and the autonomy of the child must be ensured in both processes, for the reason that the origins of digital stories is a narrative in fact.

Moreover, a well-designed environment allowing autonomy will also enable the child to internalize the digital storytelling process by supporting the development of unique products. However, it should be avoided to see the digital storytelling practices as just a digital product creation process; thus, the digital narratives are prepared within the framework of a main goal (i.e. to promote narrative/language/expressive skills, to enhance social and collaborative skills, to develop technological competencies, to reach the objective of the educational program or to foster imaginary and creative ability) and constructing the learning process in such a way as to meet this initial goal will enable the resulting product –the digital stories- emerge in meaningful contexts. In accordance with this, the use of digital and non-digital elements in a combined way in the products has found to be another important factor in making it easier for children to connect with their own lives. Thus, this connection already arises as one of the basic features of best practices mentioned by both Daniels and Bizar (2005) and Zemelman, Daniels, and Hyde (1998).

Beyond any doubt, as stated by not only prominent theorists such as Werner, Piaget, and Montessori, but also by many other researchers (Berris & Miller, 2011; Brewer, 2004; Loebach, 2004; Nuikkinen, 2011; Rentzou, 2014; Taylor, 2009); the physical environment (including the components of the classroom size, in terms of physical field size; indoor design, in terms of furnishing and equipment; arrangement of play areas/interest centers; arrangement of learning materials/resources/play objects) is an active, indispensable and inseparable part of the learning process as well as an instrument in both suggesting and supporting a rich learning experience, especially in early learning process. Torelli (2002; cited in Acer et al., 2016) also mentions that “A well-designed environment supports young children’s emotional well-being, stimulates their senses and challenges their motor skills”. From this perspective, it can be said that well-planned environments have been found to be offered to children almost in half of the best practices of STORIES Project; besides, offering well-designed experience spaces, which supports children’s cooperating, communicating, sharing, and working together or individually, occurs as important elements in best practices.

Another important point, based on the findings, has come out as the properties addressed here can actually be thought of as a chain. For example, the teacher's facilitative attitude will bring together non-judgmental learning environments. Non-judgmental learning environments will bring together a construct that will provide active participation of the learners. And this structure will bring constructivist learning approach. Such an environment will allow the child to act autonomously during story building and the use of technology. Children who are able to create stories independently and use technology in an active participation will also be on a constantly evolving curve, especially in terms of having their own learning responsibilities as part of social-emotional development and media literacy skills, which cover not only the higher-order thinking skills (such as creative thinking, critical thinking, analytic thinking, problem solving, assessing) but also the skills based on verbal, visual, auditory, symbolic or body language based facilities provided by media components.

## 5.2. A Synthesis: Main Features of Best Educational Practices of DST in ECEC

Based on the relevant literature and overall results gathered by the analysis of the common properties of selected best practices, it is concluded that main features of best educational practices of DST in ECEC can be defined as given below, within three different perspectives: (1) Teachers' Role, (2) Characteristics of the Setting, and (3) Planning the Process and Evaluation Activities of the Digital Storytelling Projects.

### 5.2.1. Teachers' Role

*1. Intending the main role as: a facilitator who encourages children's discovery and invention skills in a constructivist manner, and main tasks as: offering children a non-judging context, supervising the children during DST activities, using guiding questions, preparing the environment and the materials a prior to the main activities, and helping consistency in the use of technologies.*

According to Harmer (2007), the term 'facilitator' is used to describe a particular kind of teacher, one who is democratic rather than autocratic, and one who fosters learner autonomy (where students not only learn on their own but also take responsibility for that learning) through the use of group and pair work and by acting as more of a resource than a transmitter of knowledge. It is also emphasized by many researchers that (Berris & Miller, 2011; Brewer, 2004; Loebach, 2004; Nuikinen, 2011; Rentzou, 2014; Taylor, 2009; Tout, 2016), to have a facilitator role implies to offer children support and advice when needed, and to provide a rich learning environment and the necessary scaffolding and teaching of skills when necessary. It is vital that teachers remember to teach and instruct children in any particular skill or piece of background knowledge that is required for the task. Teachers need to develop children's abilities to; (1) identify and recognize the connections between the relevant objectives and the real world to support them to be able to transfer their skills to new contexts, (2) reflect and think about their own performances during the acquisition of new skills, (3) represent, communicate and discuss the outcomes, and (4) incorporate the use of appropriate technologies. Moving from this viewpoint, we can say that, within the perspective of digital storytelling activities conducted in ECEC, the main role of teacher as a facilitator can be seen as a strategy to enable children create a story through undertaking an investigation and applying a range of knowledge and skills. A teacher also needs to take into account how independent and capable the children are and help them move from being dependent to becoming more independent learners, which means that activities need to progress from structured to less structured; from more directed and closed activities to more open ones; from supported activities to less supported. This critical role of the teacher is quite essential in order for providing children autonomy both in storytelling process and in the use of technology, and for giving children the opportunity to be the unique owners of the final products –the digital stories. As stated by Tout (2016), the teacher's role therefore moves from being a supervisor to being more of a facilitator, scaffolding the learning for the children.

*2. Supporting children's active participation in story's construction process as designers of each story's component; planning child-centered learning processes and DST activities, which covers at least four consecutive theme-related sessions dedicated through children's interest.*

Community Child Care (2011) states that a child-centered approach offers children the opportunity to make choices about what, how and whom they want to play, as opposed to being directed or prompted by a teacher. In early childhood education, children need to construct their own knowledge from their experiences and interactions with the world around them. Hohmann and Weikart (1995) emphasizes that, the child's personal interests, questions, and intentions lead to exploration, experimentation, and the construction of new knowledge and understanding. In this context, to foster children's growth by building on children's interests, needs, strengths, understandings and capacity within a safe and caring environment and using those as the basis in planning any kind of learning process is a way to ensure that learning is not only interesting but also meaningful and relevant to children. That kind of planning also promotes children's active participation in the learning process, which is an inventive process in which children combine materials, experiences, and ideas to produce effects that are new to them, within the perspective of digital storytelling activities conducted in ECE. Accordingly, another role of preschool educators can be defined as: to promote children's involvement in story's construction process and to enable them be the designers of each story's component by planning child-centered learning processes and DST activities, which involve at least four consecutive thematic sessions dedicated through children's interest.

*3. Promoting children's resulting in a coherent story in terms of story grammar, which meets at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence); to enable children be connectors of elements apparently distant, following the phases of "Verbal-Visual-Technology" in digital story development process, which includes the consecutive steps of choosing the topic and formulating a narrative in the first stage; creating the visuals of the story by drawing or painting in the following stage; and digitalizing the components/use of technologies to develop the multimedia story artefacts -the digital story- in the final stage.*

As cited by Fichman et al. (2017); Stein and Trabasso (1982), and Trabasso and Nickels (1992) have stated that narratives begin with a setting which provides background information on the characters and their environment. A setting is followed by one or more episodes which are temporally and causally related and are centered on a protagonist. Key elements in every story are: an initiating event (the problem that generates/prompts the narrative), a goal reflecting the character's motivation to solve the problem, an attempt to achieve the goal, and an outcome which may or may not be successful. The identification of "goal-directed actions" is crucial in both comprehension and production of narrative because narrative coherence depends on encoding of actions as intentional attempts when character's goals are identified. However, when pre-school children are considered, resulting in a coherent story in terms of story grammar can be taken as a meaningful flow in the construction of the narrative in terms of understandability and harmony, and the narrative's meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence) can be accepted as an indicator of a coherence in the story grammar.

Based on the findings obtained through the analysis on best practices of STORIES Project, teachers are recommended to follow the phases of “Verbal-Visual-Technology” in digital story development process, including the consecutive steps of choosing the topic and formulating a narrative in the first stage, creating the visuals of the story by drawing or painting in the following stage, and digitalizing the components/use of technologies to develop the multimedia story artefacts in the final stage, to enable children be connectors of elements apparently distant and to result in a coherent story, in terms of story grammar.

*4. Including versatile ways of using technology and making use of the affordances of digital tools in an efficient way; to enable children represent correlations of multimodal elements in digital story making process.*

Over the past decade, there has been a massive increase in the use of technology in classrooms, with many researches showing evidence that technology has a significant potential to support the learning process, and there is still a growing trend of using interactive technologies for educational purposes. However, the extent to which we benefit from this advantage of technology depends on the intended use and how effectively it is used. When the main focus is fostering cognitive, affective, social-emotional and media literacy competencies in early childhood within digital storytelling, which requires an expanded *multimodal* approach to multiliteracy (New London Group, 1996) that focuses on an understanding of multiple discourses and forms of representation because of its structure combining of the art of storytelling and digital tools; such as graphics, audio and video (Garrety, 2008), instead of the existing monolingual, monocultural, and standardized literacy pedagogy that focuses on reading and writing, teachers should accompany children to the most effective and adequate use of technology. Understanding of multimodality can be defined as understanding messages and meanings in accordance with personal interests and using different communicative modes (eg. verbal, visual, sound, tactile); more in detail; understanding the properties that the different modes offer, understand the processes involved in transposition and adaptation between different ways or understand passages from one mode to another (eg, communicate the emotion of sadness through colors, sounds, or movements), and being aware of the differences between the properties that the different modes offer. Accordingly, to enable children represent correlations of multimodal elements, by including versatile ways of using technology and making use of the affordances of digital tools in an efficient way seems to be another role of the teaches to carry out an effective DST project.

*5. Promoting children’s autonomous use of technologies in digital story making process by offering children technological tools and applications with “touch user interface” or “tangible user interface”, which are more convenient for pre-school children's age level and motor development, instead of “graphical user interface”.*

Lovato and Waxman (2016) states that, young children’s access to interactive graphic interfaces was limited by both their cost and by the fine motor skills and eye-hand coordination required to manipulate a keyboard and mouse, although these have been available on home computers for decades. However, with the advent of touch screens on less expensive devices – smartphones and tablets – these financial and developmental barriers have been reduced. Now, touch screens are increasingly prevalent in early childhood (Cristia & Seidl, 2015). One of the main reasons of this can be that, compared with printed books and video, touch screen devices permit very young children to engage interactively in an intuitive fashion with simple actions as touching,

tapping, or dragging the objects on the touchscreen and getting a response from the objects (Lovato & Waxman, 2016; Wang et al., 2016). On the other hand, as stated by Hendricks (2016), learning with tablets gives children the opportunity to practice learning matters at their own level and pace, without affecting the rest of their classmates, and children hold more positive attitudes towards the tablet-based learning method than towards the traditional learning method. In line with the relevant literature, we also reported in the *STORIES Scientific Research Report* that tablets with touch user interfaces were the most used devices by children autonomously in both implementation years of STORIES Project, as well as iTheatre, which has a tangible user interface. Besides, in this report, the findings from the best practices of DST in ECE have also revealed that the most convenient interfaces for children's autonomous use were touch and tangible user interfaces. Considering these results, another role of the preschool teachers' has been defined as promoting children's autonomous use of technologies in digital story making process by offering children technological tools and applications with "touch user interface" or "tangible user interface".

*6. Being a part of a professional learning community to result in both; enhancing knowledge and skills on contemporary initiatives in ECE (new teaching methods/educational strategies, use of technology in ECE, etc.) and providing improvement and development in children's learning.*

As stated by Hord & Sommers (2008); the main features of a professional learning community can be identified by the collaboration and decision making among peers, and the practices activated by various components inside the community; such as, shared vision, supportive and distributed leadership, cooperative learning among adults, shared practices, sustainable development, peer support, and continual self-assessment. With these features they have, professional learning communities can be seen as ongoing professional development opportunities and instructional support. It is obvious that such an opportunity will increase the quality of education, especially in terms of preschool education; as stated by Cople and Bredekamp (2009), the quality and accountability improves when everyone involved with the child understands the outcomes they want to achieve, the plans for helping the children achieve them, the progress of ongoing assessment, and how to analyze the results. In this way, teachers can create a continuing conversation about their understandings of early childhood practice and discuss all possibilities with other teachers; in other words, they can build up relationships as a means toward student learning and adult development through reflection and dialogue. Since the literature (Fairfield, 2011) identifies that these communities have a positive impact on educational change and social justice for all students, it is important for pre-school teachers to be part of a professional learning community where they can collaborate on the more effective use of innovative approaches such as digital storytelling, which have not yet cover a common practice area in ECE, and share examples of good practices with each other.

### 5.2.2. Characteristics of the Setting

*1. To support children's social competencies, learning, and active role in the community; encouraging small group work in the whole process of digital/story making and paying attention to the heterogeneity of group structure in the project group make up process.*

Wasik (2008) states that the literature includes evidence, based on empirical findings from the guidelines and best practices, on benefits of small groups in preschool, as opposed to an activity that features the whole class or free play, affording both young children and their teachers invaluable and unique opportunities. Children can receive the individualized attention and instruction that may not be possible in large group activities, whereas teachers can better observe how individual children perform on tasks and how they interact with other children. At the same time, Sharan (1980) points out that intentionally forming heterogeneous small groups can add the value of cooperative learning opportunities, indicating that having children with varying skill levels in small groups can promote learning for all children within that group. By composing heterogeneous groups, teachers can also have the opportunity to contribute to strengthening communication, social interaction, and language skills of children, or have the opportunity to observe children more closely and identify different skills of children when working together. In line with those given above, another empirical finding from another best practice research, beside those mentioned by Wasik (2008); that's the findings of analysis of best practices of DST in ECEC within STORIES Project, is that young children function best within small heterogeneous groups, especially composed through the consideration of language/expression/narrative skills, in digital storytelling activities. So that a digital story mainly bases on a narrative, in the process of digital story making, both narrative skills and skills of integrating the narrative with the technology have equal importance. Accordingly, an essential feature of the setting, to support children's social competencies, agency and active role in the community, is given as; promoting small group work in the whole process of digital/story making, and paying attention to the heterogeneity of group structure in the project group make up process.

*2. Providing resources and materials (both digital and non-digital) for children in a rich variety during both introductory activities and digital story making process to help children combine digital and non-digital materials in a creative way; to enhance flexible, creative and divergent thinking skills of children.*

Early childhood education covers zero to six years aims at a holistic development of child's language, intelligence and personality in a learning environment that is not only joyful, child centered, playful and activity based, but also equipped with materials, which are appropriate to their size, ideas and feelings (Gogoi, 2015). There is a wide variety of learning materials for children. These include concrete play objects (kinesthetic sand, toys, cardboard box, dolls, manipulative play objects; such as LEGO, wooden blocks, etc.), drawing and painting materials (drawing paper, dry paint, pencil, crayon, watercolor paint, marker pen, paintbrush, glue, tape, scissors, etc.), story/3-D/silent books, visuals such as photos and images, musical instruments, objects from nature (pinecones, leaves, stone, etc.), real world objects (fruits, vegetables, clothes, kitchenware, salt, pepper, sugar, soap, etc.), structured or unstructured articles from the physical environment (plastics, ropes, colored pebbles, etc.), materials for experiential activities (microscope, experiment tubes, chemicals, etc.), and 3D models (models of body parts, skeleton, house, world, solar system, etc., shaded relief, puppets, etc.). To improve creative thinking in

children, Oncu (2015) and Rule et al. (2011) remark that especially unstructured objects could be useful for that purpose. Using these kind of items could improve a child's creative and divergent thinking skills because children can practice their ability to generate multiple views of things as they engage with these items and examine them upside-down, cut them into pieces, rotate, or distort them in different ways. These materials also stimulate criticism of the existing uses of everyday items and helps the children think of innovative ways to use or re-use objects.

However, in the age we are in, learning materials are no longer exclusively associated only with traditional non-digital learning materials, but also with information and communication technologies (ICT). As stated by Dix et al. (2004), ICT tools, consisting of a wide variety of digitally formatted resources including graphics, images or photos, audio and video, simulations, animations and prepared or programmed learning modules, have in common that they are specifically designed to facilitate interaction, encourage social activities, enhance creativity, and improve knowledge and competences of children, who are getting more and more involved with technology both during leisure time and in school environments. Accordingly, to help children combine digital and non-digital materials in a creative way during both introductory activities and digital story making process and by this way, to enable children to represent flexible, creative and divergent thinking skills, pre-school teachers need to prepare a setting for children which is equipped with a rich variety of both digital and non-digital resources and materials.

*3. Offering children a variety in experience spaces, where children can interact directly and continuously with technology.*

As stated by Biddle et al. (2014) the arrangement of the experience space for any kind of activity plays an important role in children's social and language interactions, growth and development because the way the physical environment is designed and configured influences how children feel, act, behave and learn. The physical environment will vary depending on the age and number of children in the classroom, as well as the goals of programs and specific activities in the classroom. Based on the findings of the analysis of best practices of DST in ECEC within STORIES Project, teachers are recommended to offer children a variety of experience spaces, such as outdoor spaces besides the classroom or especially digital laboratories or technology workshops/ateliers during the digital story making process, where children can interact continuously with technology and thus design digital products in a more motivated way.

*4. Arrangement of the experience space/learning environment effectively; in a way that offers children an inspiring and adequate setting, in terms of physical classroom size, a naturally lit indoor design (furnishing and equipment), separate play areas/interest centers, and a rich variety of both artificial and natural learning materials/resources/play objects which are clearly visible to children.*

Seefeldt and Barbour (1990, cited by Acer et al., 2016) remarks that, children learn through interaction with the environment. In order for this learning to be productive, the classroom must be carefully arranged. It should be structured so that all children meet with success as they explore it and interact with others as well as with learning materials. The environment should also be arranged so that a group of children can work and play together in an orderly manner; cooperating, communicating, sharing, and working together. Thus, research has found that children's development and the quality of their experiences are influenced by (a) the size of school facilities; (b) classroom size and density – that is, the space available for each child; (c)

the way the environment is organized – are separate activity areas provided; (d) the quantity and quality of materials; (e) the furnishings and equipment; (f) the existence of space for private activities; (g) the height of the ceiling, room textures, and the color of the walls; and (h) the levels of noise (Rentzou, 2014). Based on the findings obtained through the analysis on best practices of DST in ECE within STORIES Project, and considering the remarks from the other relevant studies (Acer et al., 2016; Edwards et al., 2014; Havu-Nuutinen & Niikko, 2014; Sheridan, Williams, & Samuelsson, 2014), indicating that the quality of any kind of learning process is related to its having well-developed, organized, and varied play materials, a naturally lit indoor design (furnishing and equipment), and separate play areas/interest centers, it is suggested that pre-school teachers should set up their experience spaces in such a way that they can make the best use of digital storytelling activities, taking into consideration the above listed features.

### **5.2.3. Planning the Process and Evaluation Activities of the DST Projects**

*1. Addressing one or more specific curricular objectives; keeping consistency of these objectives/reached outcomes with the teaching/learning methods and educational strategies, mainly including digital storytelling and project-based learning methods.*

Considering that one of the major aims of the STORIES Project is improving applicability of DST as a proper pedagogical approach, methodology, and learning model to effectively face opportunities and challenges of using media in ECEC; one way to integrate the digital storytelling approach easily into the national ECE curriculums is addressing one or more specific curricular objectives during planning a DST project. Since entire ECEC curriculums around the world commonly put plenty of emphasis on holistic development of children in terms of cognitive, motor, social-emotional, and language skills, and DST appears as a good attempt to reach those objectives by enhancing awareness in creative use of digital media; building an association between the enhanced skills expected as a result of a DST project implementation and the curricular objectives will help early childhood educators to implement an effective DST project. Besides, to result in any kind of best educational practice, a teacher should first be clear on what the educational objectives are, and then should choose the teaching/learning method and educational strategies that would be best suited to help children to achieve these particular objectives in the relevant context. Bonner (1999) also points out that different types of learning objectives require different conditions for achievement; the premise guiding the framework is that the choice of teaching methods should be based primarily on the type of learning objective. On the other hand, Goddard (2002) suggested that educators could best use technology within a framework for technology-based teaching and learning that focuses on engagement. Since project-based learning practice, which takes its roots from constructivism, offers the opportunity for effective use of technology in learning processes, an appropriate starting point for the implementation of an effective DST practice can be seen as project-based learning. At this point, together with addressing one or more specific curricular objectives and keeping consistency of these objectives/reached outcomes with the teaching/learning methods and educational strategies; the use of digital storytelling and project-based learning methods also emerge as another important feature of planning the process activities of DST projects for early childhood educators.

*2. Prior to the DST projects; carrying out preliminary activities where teachers can pre-test the technologies they will use in the digital storytelling activities and where children may have experience in narration and technology use.*

In the current digital age; media literacy, digital literacy and digital competence are all concepts that highlight the need to handle technology both from the perspective of teachers and children. Since integrating digital technologies to children's educational environments is prominent, the need for today's teachers to consider how to use technology to make learning process more effective is obvious. However, it is implied by many studies (Arslan, 2006; Christanse, 2002; European Commission, 2001; Karataş, 2002; Zavenbergen, 2007) that most of the early childhood educators are not yet capable enough in using technology for pedagogical purposes. To implement an effective practice of DST, pre-school teachers need to improve their competency levels in using latest technologies and computers. From this point of view, carrying out preliminary activities where teachers can pre-test the technologies they will use in the digital storytelling activities and where children may have experience in narration and technology use prior to the DST activities is seen as an important step for the teachers to be able to implement more effective DST practices.

*3. Monitoring the consistency of the main goal of the practices with the skills developed at the end of the digital storytelling activities through an effective assessment and documentation process; with putting great emphasis on the reflection of the process, designing the evaluation and assessment activities in a multi-stakeholder manner, where children's products –digital stories- can be shared with their families, other teachers and other children.*

In a DST practice in early childhood, the main goal of the practices can be in a wide range of variety; such as to promote narrative/language/expressive skills (e.g. the child reaches narrative awareness, learns and practices media literacy, expresses what s/he hears and sees in various ways, names the characteristics of a sound, uses voice appropriately, examines/explains visual materials, creates compositions such as a plot or story using visual materials, etc.), to enhance social and collaborative skills (e.g. the child experiences his/her self-efficacy, reinforces his/her stamina, creates stories by starting from elements strongly connected to his/her daily experiences, creates a story collaboratively in small groups, motivates himself/herself to achieve a task, expresses his/her feelings with gestures and mimics, talks about the distinct roles of individuals within a society, etc.), to develop technological competencies (e.g. the child explores digital tools, transforms and to elaborates such elements by using digital tools, uses digital tools in order to tell a story, constructs digital skills, understands movie making, transforms a fairytale into a film, etc.), to reach the cognitive or motor development objective of the educational program (e.g. the child builds cause and effect relations, recognizes diversities in sounds, groups objects according to size or tactual characteristics, etc. or the child does fine motor movements, does specific movements requiring hand and eye coordination, uses tools requiring manual skills, combines objects to create new shapes, etc.), to foster imaginary and creative ability (the child expresses himself/herself in creative ways, brings out novel products, etc.), etc. In any kind of learning process, it is necessary to monitor the consistency of those goals of practices with the skills developed at the end through an effective assessment and documentation process.

Brassard and Boehm (2007) remarks that assessment in preschools in its varying forms plays a major role in making decisions and in developing learning experiences/curricula tailored to

meet not only child but also family needs, stating “Assessment needs to incorporate research evidence and needs to focus on both learners and their learning environments, including the contributions of parents, family members, members of the community, teachers, all other relevant school personnel, and specialists.” (p. 2). In another respect, Stacey (2015) points out that pedagogical documentation, which is a formative form of assessment and an enhanced form of observation, is a way of making children’s and teacher’s thinking visible, and defined “pedagogical documentation” as of records of the collaboration between children and teachers during their learning journeys, which is a powerful communication tool between children and teachers, families and school, colleagues, and the public. As it stands, pedagogical documentation provides a means for reflective practice, which supports both assessment for learning and assessment as learning practices. Based on these, monitoring the consistency of the main goal of the practices with the skills developed at the end of the digital storytelling activities through an effective assessment and documentation process, and designing the evaluation and assessment activities in a multi-stakeholder and reflective manner, where children's digital stories can be shared with their families, other teachers and other children is considered as another important factor to implement best practices of DST in ECEC.

Based on the conclusion, practitioners are recommended to make as much effort as possible to meet the above-mentioned features of best practices so that they can design and implement qualified and effective technology-based learning activities for pre-school children through the use of the DST approach.

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## **APPENDICES:**

### ***BEST EDUCATIONAL PRACTICES OF DST IN ECEC FROM STORIES PARTNER COUNTRIES (IT, TR, FI, DE)***

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**APPENDIX I:  
BEST EDUCATIONAL PRACTICES OF DST IN ECEC FROM ITALY (IT)**

**DESCRIPTION FORM FOR THE 1<sup>ST</sup> BEST PRACTICE OF DST FROM ITALY (IT): THE FINDING OF THE MYSTERIOUS CHARACTER**

BEST PRACTICE SELECTION CRITERIA		<i>IT-1-The Findings of the Mysterious Character</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Including versatile ways of using technology</li> <li>▪ Putting plenty of emphasis on the reflection of the process</li> <li>▪ Children’s active participation in the process of the story’s construction</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Children’s participation in story’s construction process as connectors of elements apparently distant</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Representing correlations of multimodal elements</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Children’s autonomous use of technologies</li> </ul>	

DESCRIPTIVE INFORMATION		<i>IT-1-The Findings of the Mysterious Character</i>
<b>Country</b>	Italy (IT)	
<b>Academic Year</b>	2016/2017 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	3	
<b>Age Level of Children Participated in the Project</b>	48-60 months (4 years)	
<b>Total Number of Children in the Class</b>	22	
<b>Number of Project Groups</b>	Single group (composed of 5 children)	
<b>Duration of the Project</b>	6 months	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	Not explicitly mentioned	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> </ul>	
<b>Theme of the Project</b>	Adventure	

PROJECT DESCRIPTION		IT-1-The Findings of the Mysterious Character
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>To create a digital narrative starting from a story created in small group, based on children’s accounts of their holidays</li> <li>To explore digital tools and to foster the construction of digital skills, enforcing narrative awareness and peer collaboration</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>Classroom’s digital corner</li> <li>Teachers’ room</li> <li>Out of school space (forest, museum, etc.)</li> </ul>
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Medium
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	<p>Entry hall, corridors, kitchens and gathering spaces (such as the square – piazza) are designed so to give each corner of the school an identity and a specific purpose. There is almost no space unused. The contexts are designed using, natural light, and colored and comfortable furnishings transparency as to create spaces where connections are encouraged. The walls are interpreted as spaces where documentation can be displayed, as to invite people to gain a better understanding of what happens in the school.</p> <p>The square is gathering space located (generally) in a central position. Classrooms are connected to the square, allowing children to freely move between the piazza, the classroom and the atelier throughout the day.</p> <p>The play objects are freely available to the children, and always reachable. Some of the available materials are unstructured objects, not initially meant to be in a school: families bring such objects, and children explore them and give to such objects new meanings trough symbolic play.</p>
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>Drawing and painting materials</li> <li>Books</li> <li>Photos and images: videos of an experience recorded by the teachers</li> <li>Structured or non-structured articles from the physical environment: reused materials such as cans and other unstructured materials</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>Digital storytelling</li> <li>Questioning</li> <li>Problem solving</li> <li>Narration</li> <li>Cooperative learning</li> <li>Site visit/observation</li> <li>Project-based learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>Interests</li> <li>Children’s own choice</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	<ul style="list-style-type: none"> <li>Previous experience and familiarity to narration and technologies</li> </ul>

**PROJECT ACTIVITIES**

*IT-1-The Findings of the Mysterious Character*

<b>Introductory Activities</b>	The kickoff has been the view of a video realized by the teachers, regarding a mysterious character. Then the children have watched a video of an experience they realized at the train station. While the children were watching the story they had the idea to develop the story of the mysterious character, intertwining it with a railway invention.
<b>Digital Story Making Process</b>	The story’s kickoff can be traced in a process that begins with a small group of children watching a video and then proposing some ideas. A group of five children has drafted and shared the initial storyboard with a broader group of children. The children involved in the project propose to realize the story creating an actual film (intended as coating), by drawing on transparent foils. They then decide to project the foils through a bright blackboard, to add some narrative with their voices. A child creates a train with non-structured materials: the train is photographed by the other children as to add the train to the story.
<b>Evaluation and Assessment</b>	Teachers found interesting the possibility to share with a larger group of children the advancements reached in each session. They end the activity by watching the story all together and deciding a title.

**Use of Digital Technological Tools and Applications**

<i>Introductory Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Children watching a video realized by the teachers	PC connected to the video projector	---
<i>Digital Story Making Process Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Predisposition of the elements necessary to transpose the photos and transform them	Laptop, Photoshop	Laptop, Photoshop
Projection of the foils realized through a bright blackboard, then some narrative is added trough children’s voices	---	Voice recorder
Development of the story with publisher	Publisher	Publisher
<i>Evaluation and Assessment Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Children and teachers watched the story together with the entire section.	---	PC connected to the video projector (supervised by teachers)

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>IT-1-The Findings of the Mysterious Character</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ Presenting children digital stories created by teachers</li> <li>▪ Presenting children visual (photos, pictures, cartoon, documentary, movie, etc.) or auditory elements (songs, sound effects, i.e. animal sound, etc.)</li> <li>▪ Site visit/observation</li> <li>▪ Experiential activities</li> <li>▪ Telling stories</li> <li>▪ Drawing/painting activities</li> </ul>
<b>Story Starting Point</b>		<ul style="list-style-type: none"> <li>▪ Children's play scripts</li> <li>▪ Children's narratives</li> </ul>
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	Visual-Verbal-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		The Finding of the Mysterious Character
<b>Brief Summary</b>		A knight transforms his friends and then they travel
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Still-image sequence
	Children's drawings, or pictures, or written words are embedded:	By both hand and using digital tools
	Written text	Not displayed
<b>Voicing</b>	Voicing is sufficiently understandable.	
<b>Soundtrack</b>	No music. Sound effects are used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: PC (Microsoft PowerPoint), Video Projector Technology used by children: Tablet (for taking pictures), PC (Google Chrome and Microsoft PowerPoint)
<b>User Interface Employed in the Final Digital Story</b>		Graphical user interface is used by both teacher and children.

## DESCRIPTION FORM FOR THE 2<sup>ND</sup> BEST PRACTICE OF DST FROM ITALY (IT): TRAVELLING CHARACTERS

BEST PRACTICE SELECTION CRITERIA		<i>IT-2-Travelling Characters</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Arrangement of the experience space/learning environment effectively</li> <li>▪ Consistency of the objectives with the teaching methods /educational strategies</li> <li>▪ Intending adult’s role as facilitator</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Children’s participation in story’s construction process as connectors of elements apparently distant</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Representing correlations of multimodal elements</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Children’s autonomous use of technologies</li> </ul>	

DESCRIPTIVE INFORMATION		<i>IT-2-Travelling Characters</i>
<b>Country</b>	Italy (IT)	
<b>Academic Year</b>	2017/2018 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	2	
<b>Age Level of Children Participated in the Project</b>	48-60 months (4 years)	
<b>Total Number of Children in the Class</b>	22	
<b>Number of Project Groups</b>	Single group (composed of 4 children)	
<b>Duration of the Project</b>	2 months	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	7-8 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> </ul>	
<b>Theme of the Project</b>	Play-Travel-Park	

PROJECT DESCRIPTION		<i>IT-2-Travelling Characters</i>
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ To create a digital narrative starting from a story created in small group, based on children’s accounts of their holidays</li> <li>▪ To explore digital tools and to foster the construction of digital skills, enforcing narrative awareness and peer collaboration</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom’s digital corner</li> <li>▪ School garden</li> </ul>
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Medium
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	<p>Entry hall, corridors, kitchens and gathering spaces (such as the square – piazza) are designed so to give each corner of the school an identity and a specific purpose. There is almost no space unused. The contexts are designed using, natural light, and colored and comfortable furnishings transparency as to create spaces where connections are encouraged. The walls are interpreted as spaces where documentation can be displayed, as to invite people to gain a better understanding of what happens in the school.</p> <p>The square is gathering space located (generally) in a central position. Classrooms are connected to the square, allowing children to freely move between the piazza, the classroom and the atelier throughout the day.</p> <p>The play objects are freely available to the children, and always reachable. Some of the available materials are unstructured objects, not initially meant to be in a school: families bring such objects, and children explore them and give to such objects new meanings trough symbolic play.</p>
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Drawing and painting materials: markers</li> <li>▪ Books: books from the school library</li> <li>▪ Photos and images</li> <li>▪ Musical instruments: rain stick</li> <li>▪ Objects from nature</li> <li>▪ Real world objects</li> <li>▪ Structured or non-structured articles from the physical environment: reused materials such as cans and other unstructured materials</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Questioning</li> <li>▪ Educational play</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> <li>▪ Site visit/observation</li> <li>▪ Project-based learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Interests</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	<ul style="list-style-type: none"> <li>▪ Previous experience and familiarity to narration, technologies, and digital storytelling</li> </ul>

PROJECT ACTIVITIES		<i>IT-2-Travelling Characters</i>
<b>Introductory Activities</b>	The kickoff has been the creation of characters (sort of puppets), realized by using recycled materials (cans, bottles). The teacher has then proposed the use such characters to create a story.	
<b>Digital Story Making Process</b>	<p>The story's kickoff can trace in process that begins with a small group of children creating characters (materially) and then proposing a first storyboard. A group of five children has drafted and shared the initial storyboard with a broader group of children. This first phase has been supported with a digital recorder, a tablet and a photo camera. During the second session, the storyboard has been developed by the entire section (during an activity called assembly). During the third session, the elements necessary to the transposition on power point have been predisposed. In the fourth session, children watched a digital story created the previous year, as to recall the most salient elements. Then, during the fifth session children have searched on the web some landscapes for the story.</p> <p>During the sixth session the children developed the story with Power point. Then, the teachers predisposed two different laptops' workstations, as to facilitate children in their work and avoid the risk of disregard. In the seventh session, children continued to create the story with power point. Furthermore, the narrative voicing and sound effects have been recorded.</p> <p>In the final session, the finishing works and some final elements were added. Finally, children and teachers watched the story together.</p>	
<b>Evaluation and Assessment</b>	Teachers found interesting the possibility to share with a larger group of children the advancements reached in each session.	
<b>Use of Digital Technological Tools and Applications</b>		
<i>Introductory Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
A small group of children creates characters (materially) and then proposing a first storyboard.	PC connected to the video projector	Tablet (used by children to take pictures of the characters created)
<i>Digital Story Making Process Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Development of the storyboard	---	Tablet
Predisposition of the elements necessary to transpose the photos on power point	---	Tablet
Vision of a previous year's digital story, as to recall the most salient elements	PC connected to the video projector	---
Research on the web to find some landscapes for the story	---	PC (Google Chrome, supervised by teachers)
Development of the story with Power point.	---	PC (PowerPoint, supervised and helped by teachers)
<i>Evaluation and Assessment Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Children and teachers watched the story together with the entire section	---	PC connected to the video projector (supervised by teachers)

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>IT-2-Travelling Characters</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ 2D/3D material production with children (puppet, animal shelter, poster, booklet, model house, costumes, etc.)</li> <li>▪ Telling stories</li> </ul>
<b>Story Starting Point</b>		Children's narratives
<b>Amount of Narrative Structure Provided</b>		The child is given a topic and is asked to tell a story.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> </ul>
	Phases of the Story Development	Verbal-Visual-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		Travelling Characters
<b>Brief Summary</b>		A knight transforms his friends and then they travel
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Animated slideshow
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	A written text is displayed and it integrates voicing.
<b>Voicing</b>	Voicing is sufficiently understandable.	
<b>Soundtrack</b>	No music. Sound effects are used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: PC (Microsoft PowerPoint), Video Projector Technology used by children: Tablet (for taking pictures), PC (Google Chrome and Microsoft PowerPoint)
<b>User Interface Employed in the Final Digital Story</b>		Graphical user interface is used by both teacher and children.

### DESCRIPTION FORM FOR THE 3<sup>RD</sup> BEST PRACTICE OF DST FROM ITALY (IT): A MONKEY, A CAKE, AND DRAGON BECOME FRIENDS

BEST PRACTICE SELECTION CRITERIA		<i>IT-3-A Monkey, A Cake, and Dragon Become Friends</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Supporting children’s agency and active role in the community</li> <li>▪ Supporting children’s social competencies</li> <li>▪ Intending adult’s role as facilitator</li> <li>▪ Children’s active participation in the process of the story’s construction</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Children’s autonomous use of technologies</li> </ul>	

DESCRIPTIVE INFORMATION		<i>IT-3-A Monkey, A Cake, and Dragon Become Friends</i>
<b>Country</b>	Italy (IT)	
<b>Academic Year</b>	2017/2018 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	3	
<b>Age Level of Children Participated in the Project</b>	45-69 months (4-5 years)	
<b>Total Number of Children in the Class</b>	24	
<b>Number of Project Groups</b>	Five groups (three of the groups are composed of 4 children, one of the groups is composed of 5 children and the other one is composed of 7 children)	
<b>Duration of the Project</b>	1 month	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	5-6 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> </ul>	
<b>Theme of the Project</b>	Friendship, Adventure	

PROJECT DESCRIPTION		<i>IT-3-A Monkey, A Cake, and Dragon Become Friends</i>
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ Creating stories by starting from elements strongly connected to children’s experiences (their daily life in preschool), chosen and recorded by using a digital camera</li> <li>▪ Fostering children’s capacity to transform and elaborate such elements by using digital tools, always intertwined with traditional languages and, then their capacity to create a story in small groups</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom</li> <li>▪ Classroom’s digital corner</li> <li>▪ Atelier</li> <li>▪ School garden</li> </ul>
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Large
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	<p>Entry hall, corridors, kitchens and gathering spaces (such as the square – piazza) are designed so to give each corner of the school an identity and a specific purpose. There is almost no space unused. The contexts are designed using, natural light, and colored and comfortable furnishings transparency as to create spaces where connections are encouraged. The walls are interpreted as spaces where documentation can be displayed, as to invite people to gain a better understanding of what happens in the school.</p> <p>The square is gathering space located (generally) in a central position. Classrooms are connected to the square, allowing children to freely move between the piazza and the classroom throughout the day.</p> <p>The play objects are freely available to the children, and always reachable. Some of the available materials are unstructured objects, not initially meant to be in a school: families bring such objects, and children explore them and give to such objects new meanings trough symbolic play.</p>
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Drawing and painting materials: pencils and papers</li> <li>▪ Photos and images: photo about the different elements of the school taken by children in the first activity of digital storytelling</li> <li>▪ Objects from nature: nuts, plants</li> <li>▪ Real world objects: clay</li> <li>▪ Structured or non-structured articles from the physical environment: reused materials such as cans and other unstructured materials</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Discussion</li> <li>▪ Questioning</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> <li>▪ Site visit/observation</li> <li>▪ Project-based learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Language skills</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	Previous experience and familiarity to narration, technologies, and digital storytelling

**PROJECT ACTIVITIES**

*IT-3-A Monkey, A Cake, and Dragon Become Friends*

<b>Introductory Activities</b>	In order to involve children and to connect the project with their daily life, we have asked to a small group of children to take some pictures to some elements and objects of the school. Such pictures will be – in a successive moment, useful to create new stories and shared narratives. After a dialogue with the children of the school. The group in the atelier represents some subjects with clay, and then explores the park looking for further subjects to photograph.
<b>Digital Story Making Process</b>	Children take pictures of spaces within the preschool and in the park. During the atelier they look at them and, then, they choose some characters to reproduce with clay. During the discussion they share the first ideas on a possible story; the reflections continue in smaller groups. Finally, the pictures chosen to create a narrative are saved in i-Theatre and the story becomes digital.
<b>Evaluation and Assessment</b>	As we usually do, the processes displayed by the group have been observed. For each meeting we have created a diary with images, as to analyze the process of digital stories creation (it helped us to propose the successive phases). Then we met with the atelieristas. With the interns and the pedagogistas in order to share the emerging conceptualities and decide how we could have propose a further similar experience.

**Use of Digital Technological Tools and Applications**

<i>Introductory Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Looking for interesting elements around the school, useful to draft the story	Camera	Camera
<i>Digital Story Making Process Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Choosing the elements of the story	Computer-Photo Gallery	---
Recording story, scanning pictures, animating characters	---	i-Theatre
Recording the activity developed by children	Camera	---
<i>Evaluation and Assessment Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Watching the final media product (digital story) with the whole group	i-Theatre	i-Theatre

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>IT-3-A Monkey, A Cake, and Dragon Become Friends</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Presenting children real world objects (fruits, vegetables, clothes, kitchenware, etc.) or objects from nature (pinecones, leaves, stone, etc.)</li> <li>▪ Site visit/observation</li> </ul>
<b>Story Starting Point</b>		Stimuli for original construction
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Non-judgmental attitude</li> </ul>
	Phases of the Story Development	Verbal-Visual-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		A Monkey, A Cake and Dragon Become Friends
<b>Brief Summary</b>		Three characters meet and became friends
<b>Story Structure Category and Level of Story Grammar Development</b>		Reactive sequence
<b>Visual Elements</b>	Product Type	Animation
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Not displayed
<b>Voicing</b>	Voicing is sufficiently understandable.	
<b>Soundtrack</b>	No music. Sound effects are used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: --- Technology used by children: i-Theatre
<b>User Interface Employed in the Final Digital Story</b>		Tangible user interface is used by children.

**DESCRIPTION FORM FOR THE 4<sup>TH</sup> BEST PRACTICE OF DST FROM ITALY (IT): SKATEBOARD'S FRIENDS**

<b>BEST PRACTICE SELECTION CRITERIA</b>		<i>IT-4-Skateboard's Friends</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Supporting children's agency and active role in the community</li> <li>▪ Supporting children's social competencies</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Children's active participation in the process of the story's construction</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Children's autonomous use of technologies</li> </ul>	

<b>DESCRIPTIVE INFORMATION</b>		<i>IT-4-Skateboard's Friends</i>
<b>Country</b>	Italy (IT)	
<b>Academic Year</b>	2017/2018 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	3	
<b>Age Level of Children Participated in the Project</b>	45-69 months (4-5 years)	
<b>Total Number of Children in the Class</b>	24	
<b>Number of Project Groups</b>	Five groups (three of the groups are composed of 4 children, one of the groups is composed of 5 children and the other one is composed of 7 children)	
<b>Duration of the Project</b>	1 month	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	3-4 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> </ul>	
<b>Theme of the Project</b>	Friendship, Adventure	

PROJECT DESCRIPTION		<i>IT-4-Skateboard's Friends</i>
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ Creating stories by starting from elements strongly connected to children's experiences (their daily life in preschool), chosen and recorded by using a digital camera</li> <li>▪ Fostering children's capacity to transform and elaborate such elements by using digital tools, always intertwined with traditional languages and, then their capacity to create a story in small groups</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom</li> <li>▪ Classroom's digital corner</li> <li>▪ Atelier</li> <li>▪ School garden</li> </ul>
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Large
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	<p>Entry hall, corridors, kitchens and gathering spaces (such as the square – piazza) are designed so to give each corner of the school an identity and a specific purpose. There is almost no space unused. The contexts are designed using, natural light, and colored and comfortable furnishings transparency as to create spaces where connections are encouraged. The walls are interpreted as spaces where documentation can be displayed, as to invite people to gain a better understanding of what happens in the school.</p> <p>The square is gathering space located (generally) in a central position. Classrooms are connected to the square, allowing children to freely move between the piazza and the classroom throughout the day.</p> <p>The play objects are freely available to the children, and always reachable. Some of the available materials are unstructured objects, not initially meant to be in a school: families bring such objects, and children explore them and give to such objects new meanings trough symbolic play.</p>
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Drawing and painting materials: pencils and papers</li> <li>▪ Photos and images: photo about the different elements of the school taken by children in the first activity of digital storytelling</li> <li>▪ Objects from nature: nuts, plants</li> <li>▪ Real world objects: clay</li> <li>▪ Structured or non-structured articles from the physical environment: reused materials such as cans and other unstructured materials</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Discussion</li> <li>▪ Questioning</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> <li>▪ Site visit/observation</li> <li>▪ Project-based learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Language skills</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	Previous experience and familiarity to narration, technologies, and digital storytelling

PROJECT ACTIVITIES		IT-4-Skateboard's Friends	
<b>Introductory Activities</b>	In order to involve children and to connect the project with their daily life, we have asked to a small group of children to take some pictures to some elements and objects of the school. Such pictures will be – in a successive moment, useful to create new stories and shared narratives. After a dialogue with the children of the school. The group in the atelier represents some subjects with clay, and then explores the park looking for further subjects to photograph.		
<b>Digital Story Making Process</b>	Children take pictures of spaces within the preschool and in the park. During the atelier they look at them and, then, they choose some characters to reproduce with clay. During the discussion they share the first ideas on a possible story; the reflections continue in smaller groups. Finally, the pictures chosen to create a narrative are saved in i-Theatre and the story becomes digital.		
<b>Evaluation and Assessment</b>	As we usually do, the processes displayed by the group have been observed. For each meeting we have created a diary with images, as to analyze the process of digital stories creation (it helped us to propose the successive phases). Then we met with the atelieristas. With the interns and the pedagogistas in order to share the emerging conceptualities and decide how we could have propose a further similar experience.		
<b>Use of Digital Technological Tools and Applications</b>			
<i>Introductory Activities</i>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Looking for interesting elements around the school, useful to draft the story	Camera		Camera
<i>Digital Story Making Process Activities</i>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Choosing the elements of the story	Computer-Photo Gallery		---
Recording story, scanning pictures, animating characters	---		i-Theatre
Recording the activity developed by children	Camera		---
<i>Evaluation and Assessment Activities</i>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Watching the final media product (digital story) with the whole group	i-Theatre		i-Theatre

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>IT-4-Skateboard's Friends</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Educational plays</li> <li>▪ Presenting children real world objects (fruits, vegetables, clothes, kitchenware, etc.) or objects from nature (pinecones, leaves, stone, etc.)</li> <li>▪ Site visit/observation</li> </ul>
<b>Story Starting Point</b>		Stimuli for original construction
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Non-judgmental attitude</li> </ul>
	Phases of the Story Development	Verbal-Visual-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		Skateboard's Friends
<b>Brief Summary</b>		Two friends have fun together
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Animation
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Not displayed
<b>Voicing</b>		Voicing is clearly understandable.
<b>Soundtrack</b>		No music. Sound effects are used.
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: --- Technology used by children: i-Theatre
<b>User Interface Employed in the Final Digital Story</b>		Tangible user interface is used by children.

## APPENDIX II: BEST EDUCATIONAL PRACTICES OF DST IN ECEC FROM TURKEY (TR)

### DESCRIPTION FORM FOR THE 1<sup>ST</sup> BEST PRACTICE OF DST FROM TURKEY (TR): PLANTING A RAINBOW

BEST PRACTICE SELECTION CRITERIA		<i>TR-1-Planting A Rainbow</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Arrangement of the experience space/learning environment effectively</li> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Supporting children's agency and active role in the community</li> <li>▪ Addressing one or more specific curricular objectives</li> <li>▪ Putting plenty of emphasis on the reflection of the process</li> <li>▪ Supporting children's social competencies</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Children's participation in story's construction process as designers of each story's component</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Making use of the affordances of digital tools in an efficient way</li> <li>▪ Children's autonomous use of technologies</li> </ul>	

DESCRIPTIVE INFORMATION		<i>TR-1-Planting A Rainbow</i>
<b>Country</b>	Turkey (TR)	
<b>Academic Year</b>	2016/2017 academic year	
<b>Status of the School</b>	Private Kindergarten	
<b>Number of Teachers Performed the Project</b>	2	
<b>Age Level of Children Participated in the Project</b>	48-60 months (4 years)	
<b>Total Number of Children in the Class</b>	16	
<b>Number of Project Groups</b>	Four groups (composed of 4 children in each group)	
<b>Duration of the Project</b>	1 month	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	9-12 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> <li>▪ To reach the objectives of the educational program</li> </ul>	
<b>Theme of the Project</b>	Nature and Colors	

PROJECT DESCRIPTION		TR-1-Planting A Rainbow												
<b>Objectives and Expected Outcomes</b>		<p>At the end of the project activities, the child:</p> <ul style="list-style-type: none"> <li>▪ Builds cause and effect relations (Cognitive Development)</li> <li>▪ Creates a story using pictures showed (Cognitive Development)</li> <li>▪ Recognizes diversities in sounds (loudness, pitch, etc.) (Cognitive Development)</li> <li>▪ Uses voice appropriately (Language Development)</li> <li>▪ Expresses what s/he hear and see in various ways (Language Development)</li> <li>▪ Expresses himself/herself in creative ways (Social – Emotional Development)</li> <li>▪ Motivates himself/herself to achieve a task (Social – Emotional Development)</li> <li>▪ Expresses his/her feelings with gestures and mimics (Social – Emotional Development)</li> <li>▪ Does fine motor movements (Motor Development)</li> </ul>												
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom</li> <li>▪ School garden</li> <li>▪ Out of school space (forest, museum, etc.)</li> </ul>												
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Large												
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	<p>In the classroom, the space is available for each child and individual activities. The room texture and the color of the walls are designed optimally to support children’s development. The number of places for storing and presenting children’s activity materials and products are sufficient. The cabinets and wardrobes which housed the activity materials, tables and chairs have a suitable height for access by children. Lightening, heating and ventilation systems are sufficient and the space has healthy flooring.</p> <p>The classroom has separated interest centers (dramatic play center, block center, reading center, manipulative center, mobile learning center, art center) which could support students’ development.</p> <p>The play objects are stimulating. Many of the available materials in the classroom are carefully selected to foster cognitive development (providing children with opportunities to classify, find relationships, measure, compare, match, sort, label, etc.), effectively utilized, clearly visible to children and they are all placed separately and suitably according to the related interest centers.</p>												
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Drawing and painting materials: scissors, drawing paper, colored cardboard, glue, tape, crayons, water-color paint</li> <li>▪ Books: Planting a Rainbow, Mi papa estuvo en la selva (My Dad was in the Jungle), Curious George Plants A Seed, Tohumun Rüyası (The Dream of a Seed), The Giving Tree, The Cow Who Climbed a Tree, The Tiny Seed, Der Baum der Jahreszeiten (The Tree of the Seasons), In The Forest, Stuck, Nature’s Day, Meraklı Minik Dergisi (Journal of Curious Puppy)</li> <li>▪ Photos and images: plant images, plant presentations prepared by the teachers, A short movie named Elif is Learning: Plant World, Teacher’s Digital Story (The Tiny Seed)</li> <li>▪ Objects from nature: seeds of different plants, potted plants</li> </ul>												
<b>Teaching Methods and Educational Strategies</b>		<table border="0"> <tr> <td>▪ Digital storytelling</td> <td>▪ Direct instruction</td> <td>▪ Cooperative learning</td> <td>▪ Gallery walk</td> </tr> <tr> <td>▪ Discussion</td> <td>▪ Demonstration</td> <td>▪ Brainstorming</td> <td>▪ Site visit/observation</td> </tr> <tr> <td>▪ Questioning</td> <td>▪ Narration</td> <td>▪ Experiment</td> <td>▪ Project-based learning</td> </tr> </table>	▪ Digital storytelling	▪ Direct instruction	▪ Cooperative learning	▪ Gallery walk	▪ Discussion	▪ Demonstration	▪ Brainstorming	▪ Site visit/observation	▪ Questioning	▪ Narration	▪ Experiment	▪ Project-based learning
▪ Digital storytelling	▪ Direct instruction	▪ Cooperative learning	▪ Gallery walk											
▪ Discussion	▪ Demonstration	▪ Brainstorming	▪ Site visit/observation											
▪ Questioning	▪ Narration	▪ Experiment	▪ Project-based learning											
<b>Educational Context</b>	Project Group Make Up	Heterogeneous												
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Gender</li> <li>▪ Language skills</li> <li>▪ Academic skills</li> </ul>												
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation												
	Contextualization of the Project	Previous experience and familiarity to narration, technologies, and digital storytelling												

<p><b>Introductory Activities</b></p>	<p><b>Activity 1: Garden Observation:</b> Children learn that they will start a new unit by examining the Primary Years Board, which the teacher has already prepared. The teacher asks them to look at the pictures and guess what this unit might be about. The plant pictures on the board allow children to easily understand that the unit is about nature. After the predictions, she tells the children the name and main idea of the unit. And she asks the children, "Which part of the school can we go to get information about this unit?" All together, they visit the gardens in the school and talk about the plants. With a discussion about "with whom and what we share in the world?" during the garden observation, the first introductory activity of the unit and the project is completed.</p> <p><b>Activity 2: Library Corner and The Seeds:</b> The teacher briefly talks about the life cycle of the plants with the children, and gets information about the knowledge level of the children about the life of the plants. She then displays the covers of the books about the plants that are borrowed from the library and tells their names. She indicates that children will find the books in the temporary corner created and they will be able to review these books when they wish. She also tells them that she will read each of these books during the unit in the class. She begins with the book titled The Dream of a Seed. Finally, the seeds children have brought from their homes are examined and displayed in the class.</p> <p><b>Activity 3:</b> Potted plants brought from the house are examined. It is intended that children learn the names, characteristics and requirements for the care of these plants. Children take care of these plants for several weeks. Then all together a germination experiment is conducted. In this way, the knowledge children have about the plants is connected to real life through an authentic experience.</p> <p><b>Activity 4: The short movie "Elif is Learning: Plant World":</b> Movie is watched and information about the characteristics of the plants, the things they need to grow and our responsibilities towards them are revisited. <a href="https://www.youtube.com/watch?v=TMNFyG7TD6k">https://www.youtube.com/watch?v=TMNFyG7TD6k</a></p> <p><b>Activity 5: Book Corner:</b> All books and magazines from the library about the plants, the personal archives of the teachers, Issues of the "Meraklı Minik (Curious Child)" magazine about the subject, books that the children brought from their homes and play cards are stored in a corner and presented to the children for their free use. The teacher reads one or two from these books every day. At the end of the project, all books are aimed to be read.</p> <p><b>Activity 6: Atatürk Arboretum Site Visit:</b> A site visit to Atatürk Arboretum, which is Turkey's unique open-air museum on plants, takes place. During this trip, plant species and characteristics are experienced from the first hand by making nature walk, touching, smelling and feeling. Children lie on the grass to be able to notice the voices in the nature, their eyes are closed, and the voices are listened by waiting quietly. Then children talk about these voices. Finally, the children fill in the observation form they have brought with them.</p> <p><b>Activity 7: DST 1 "Tiny Seed, Eric Carle":</b> Teacher tells that she prepared a digital story just like the ones children created previously and arouses curiosity before the presentation of teacher's digital story. When creating this digital story, she tells she used Eric Carle's story named Tiny Seed. After that, the digital story is watched with the children. The teacher asks children to predict which methods and applications are used in the story and then explains them how she created this digital story. In this book written by Eric Carle, the life cycle of a plant and the importance of being strong are emphasized. At the end of the story, children are asked to give feedback.</p> <p><b>Activity 8: Planting A Rainbow, Lois Ehlert:</b> The story named Planting a Rainbow is read. Being inspired by this story children are asked to think about plants in diverse colors and to integrate them within a single story. Children are divided into project groups; they draw plants in various colors, like in this book, and create their own story. The story board they prepared is displayed in class.</p>
<p><b>Digital Story Making Process</b></p>	<p><b>Activity: Digital Story Project named Planting a Rainbow! :</b> In this project, teacher tells the children that she wants to introduce them a new application. She explains that they have learned Puppet Pals application and can now try different things. She introduces Drawing Pad application with the help of a projector. Then children draw same pictures in the story board one by one using this application. All the pictures are combined using i-Movie application and vocalized.</p>
<p><b>Evaluation and Assessment</b></p>	<p><b>Activity 1:</b> The digital story is watched with all the children. Teacher asks questions that enable the activity process to be reviewed (descriptive questions). Children are given opportunity to share their experience and feelings about the activity (affective questions). Teacher asks open-ended questions about the objectives and outcomes specified for the project (questions on learning objectives). In order to ensure the permanence of their learning, children are asked questions to establish relationships between their activity experiences and their real life (questions of association with life). Feedbacks of children on these items are noted.</p> <p><b>Activity 2:</b> The data on the project and the product are documented with the methods selected by the teacher (pictures, interviews, video recording, photographs, sketches, anecdotes, etc.)</p>

## Use of Digital Technological Tools and Applications

*Introductory Activities*

<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Presenting children theme-related visuals (Showing photos/images of various plants, showing a short-movie entitled "Plant World", showing teacher's digital story entitled "Tiny Seed")	Hardware: Computer, Slide Projector Software: Power Point, QuickTime Player Social Media Website: YouTube	---
Printing images of several plants for painting	Hardware: Printer	---
Teachers' documentation of the process (Taking photos of children during the activities)	Hardware: Smartphone	---

*Digital Story Making Process Activities*

<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Drawing plants digitally	---	Hardware: Tablet ( I-pad), Digital Pen Software: Drawing Pad App
Combining separate scenes of digital stories	Hardware: Computer Software: I-movie	---
Voice recording of children	Hardware: Computer Software: I-movie	---

*Evaluation and Assessment Activities*

<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Watching the final media product (digital story) with the whole group	Hardware: Computer, Slide Projector Software: I-movie	---

DESCRIPTION OF THE DIGITAL STORY CREATED		TR-1-Planting A Rainbow
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ Presenting children digital stories created by teachers</li> <li>▪ Presenting children visual (photos, pictures, cartoon, documentary, movie, etc.) or auditory elements (songs, sound effects, i.e. animal sound, etc.)</li> <li>▪ Reading/presenting story books/3-D books/silent books</li> <li>▪ Presenting children real world objects (fruits, vegetables, clothes, kitchenware, etc.) or objects from nature (pinecones, leaves, stone, etc.)</li> <li>▪ Presenting children critical/background/initial information (e.g. technological expertise, theme-content-core information, i.e. history of dinosaurs)</li> <li>▪ Experiential activities</li> <li>▪ Telling stories</li> <li>▪ Drawing/painting activities</li> </ul>
<b>Story Starting Point</b>		Stimuli for original construction
<b>Amount of Narrative Structure Provided</b>		Medium amount of structure. The child is given one or more potential story characters, a physical setting, and possibly an event.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Instructor, guide and facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Observe children during activities</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Non-judgmental attitude</li> <li>▪ Write the children story and read</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	Visual-Verbal-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		Planting A Rainbow
<b>Brief Summary</b>		The rainbow finds its lost colors from the plants of nature.
<b>Story Structure Category and Level of Story Grammar Development</b>		Reactive sequence
<b>Visual Elements</b>	Product Type	Still-image sequence
	Children's drawings, or pictures, or written words are embedded:	By using digital tools
	Written text	Not displayed
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	No music and no sound effects.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: Computer, iMovie Technology used by children: Tablet (iPad), Digital Pen, Drawing Pad App
<b>User Interface Employed in the Final Digital Story</b>		Graphical user interface is used by teacher and touch user interface is used by children.

## DESCRIPTION FORM FOR THE 2<sup>ND</sup> BEST PRACTICE OF DST FROM TURKEY (TR): TALKING FRUITS

BEST PRACTICE SELECTION CRITERIA		<i>TR-2-Talking Fruits</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Supporting children's agency and active role in the community</li> <li>▪ Addressing one or more specific curricular objectives</li> <li>▪ Supporting children's social competencies</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Children's active participation in the process of the story's construction</li> <li>▪ Children's participation in story's construction process as designers of each story's component</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> </ul>	

DESCRIPTIVE INFORMATION		<i>TR-2-Talking Fruits</i>
<b>Country</b>	Turkey (TR)	
<b>Academic Year</b>	2017/2018 academic year	
<b>Status of the School</b>	Private Kindergarten	
<b>Number of Teachers Performed the Project</b>	2	
<b>Age Level of Children Participated in the Project</b>	60-72 months (5 years)	
<b>Total Number of Children in the Class</b>	10	
<b>Number of Project Groups</b>	Two groups (composed of 5 children in each group)	
<b>Duration of the Project</b>	2-3 weeks	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	7-8 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> <li>▪ To reach the objectives of the educational program</li> </ul>	
<b>Theme of the Project</b>	Our Body and Health	

PROJECT DESCRIPTION		TR-2-Talking Fruits
<b>Objectives and Expected Outcomes</b>		<p>At the end of the project activities, the child:</p> <ul style="list-style-type: none"> <li>▪ Groups objects according to size/tactual characteristics (Cognitive Development)</li> <li>▪ Names the source/characteristics of a sound (Language Development)</li> <li>▪ Makes sound similar to the sound s/he hears (Language Development)</li> <li>▪ Examines visual materials (Language Development)</li> <li>▪ Asks/answers questions about visual materials (Language Development)</li> <li>▪ Explains visual materials (Language Development)</li> <li>▪ Using visual materials, creates compositions such as a plot or story (Language Development)</li> <li>▪ Names his/her physical/ main affective characteristics (Social-Emotional Development)</li> <li>▪ Talks about the distinct roles of the same person /individuals within a society (Social-Emotional Development)</li> <li>▪ Attaches/detaches objects (Motor Development)</li> <li>▪ Uses tools requiring manual skills (Motor Development)</li> <li>▪ Combines objects to create new shapes (Motor Development)</li> <li>▪ Bounces on one foot/two feet (Motor Development)</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom</li> <li>▪ Digital laboratory</li> <li>▪ Science laboratory</li> <li>▪ Infirmary</li> </ul>
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Medium
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	In the classroom, the space is available for each child and individual activities. The number of places for storing and presenting children's activity materials and products are sufficient. The cabinets and wardrobes which housed the activity materials, tables and chairs have a suitable height for access by children. Lightening, heating and ventilation systems are sufficient and the space has healthy flooring. The classroom does not have has separated interest centers. The play objects are stimulating. Many of the available materials in the classroom are carefully selected to foster cognitive development (providing children with opportunities to classify, find relationships, measure, compare, match, sort, label, etc.), effectively utilized and clearly visible to children.
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Concrete play objects: Play dough</li> <li>▪ Drawing and painting materials: drawing paper, colored pens and crayons</li> <li>▪ Books: Dünyanın Karnı Ağrıyor (The Earth Has A Stomach Ache)</li> <li>▪ Photos and images: theme-related posters, the digital story entitled "Rain Drops", photos of sense organs and internal organs, visuals for optical illusion experiment</li> <li>▪ Objects from nature: nuts</li> <li>▪ Real world objects: profession costumes (doctor, nurse, etc.), honey, lemon juice, vinegar, and red pepper, jam, and salt, essences of several fruits, match and fruits.</li> <li>▪ Structured or non-structured articles from the physical environment: pieces of soap</li> <li>▪ 3D models: Musculoskeletal model, organ models (ear, heart, etc.), fruit models, puppets</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Role playing/drama</li> <li>▪ Discussion</li> <li>▪ Questioning</li> <li>▪ Direct instruction</li> <li>▪ Narration</li> <li>▪ Cooperative learning</li> <li>▪ Experiment</li> <li>▪ Gallery walk</li> <li>▪ Site visit/observation</li> <li>▪ Project-based learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Language skills</li> <li>▪ Social skills</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	Previous experience and familiarity to narration, technologies, and digital storytelling

PROJECT ACTIVITIES		<i>TR-2-Talking Fruits</i>
<b>Introductory Activities</b>	<p><b>Activity 1:</b> The teacher establishes a circle time by seating children in a circle. Teacher asks: How do you feel today? Answers such as good, sick, unpleasant are discussed. Then she explains that they will talk about our body and health this week. Parts of our body and sensory organs are introduced. "The Earth's Stomach is Aching", which is a story on forests being earth's lungs and seas being its stomach and how these organs are endangered. A comparison is made with the human body, and the potential harm, when it is not taken care of appropriately. Children are encouraged to talk about the story.</p> <p><b>Activity 2:</b> The children sit on the chairs in a half moon shape. The teacher explains that today they will have activities related to our body and healthy eating. Prepared organ models, aprons and posters are displayed in the classroom. Children come in pairs or triplets and examine the materials by wearing and touching. Information is provided about the each organ examined (such as ear: ensures the balance of our body - heart: pumps blood - skeleton: gives shape to our body). Then the benefits of foods such as orange, banana, nuts, lemons, etc. for our health are explained. Every child is given colored slime and is asked to draw pictures of the vegetables and fruits they prefer.</p> <p><b>Activity 3:</b> For an experiment on "Smell", "Optical Illusion" and "Taste" children sit around the tables. Children begin with the nose, our organ for smelling. First they try to identify the fruit essences they smell in the cups (strawberry-orange-lemon). Then the "Optical Illusion Experiment" about the eyes, our organ for seeing is conducted. For this, a small piece of soap is shown to the children. It is perceived as a candle, because it looks like it at first glance. But when one tries to light it with a match; it is observed that it does not burn like a candle. Foods such as "honey-lemon juice-vinegar-salt-red pepper-jam" are placed on the tables. The functions of tongue, our organ for tasting are handled with an activity. Blindfolded children try to predict the food from its taste.</p> <p><b>Activity 4:</b> In the drama corner, children are asked to find the clothes of health related professions. (Such as a doctor's coat, nurse's clothes, doctor's examination kit, a stethoscope, etc.). Children are assigned to the groups again and they perform a drama named "The Sick Child" using the materials they chose.</p>	
<b>Digital Story Making Process</b>	<p>Teacher tells children they will create digital stories about our health, such as a digital story called "Rain Drops". Together, the story "Rain Drops" is watched. A discussion takes place about the parts of our body, internal organs, sensory organs and skeletal system by examining the models and pictures in our class. Photographs and videos are taken during the activities.</p> <p>Then the children were grouped as 5 + 5. Children pick up puppets and fruit models for use in the story. In the Innovation Lab the characters of the story to be created (Tiny Cat, Ayse, Mert) were identified. Later, the children determine which character they will draw. The pictures were drawn to create a story in which these characters take place. Children talk about what the characters would be saying in the story and teacher takes notes. Together, story line is created. The names "mother, child, apple, grape, watermelon etc." are mutually determined. After the drawings are completed, children are given tablets. The photos of the characters are taken with the children. Reading props are made after their mouths are drawn. Later on, children were told about using i-Pad (Chatter Pix Kids) to create a story. They are told that they will record their sounds to vocalize pictures drawn. Children work on vocalizations. Each child acts out his/her character and records his/her sound.</p>	
<b>Evaluation and Assessment</b>	<p>The digital story is watched with children. Children's emotions and thoughts are noted. The process is documented through video recordings.</p>	

## Use of Digital Technological Tools and Applications

*Introductory Activities*

Activities	Technologies (Hardware and Software) used by Teacher	Technologies (Hardware and Software) used by Children
Presenting children the previous digital story created by the same children	Hardware: Computer, Slide Projector Software: Windows Media Player	---
Printing images of several animals and vegetables	Hardware: Printer	---
Teachers' documentation of the process (Taking photos of children during the activities)	Hardware: Smartphone	---

*Digital Story Making Process Activities*

Activities	Technologies (Hardware and Software) used by Teacher	Technologies (Hardware and Software) used by Children
Creating the digital story	Hardware: Tablet (I-pad) Software: Chatter Pix Kids	Hardware: Tablet (I-pad) Software: Chatter Pix Kids
Taking photos for storyboard designing	---	Hardware: Smartphone
Printing children's drawings to add into the digital story	Hardware: Printer	---

*Evaluation and Assessment Activities*

Activities	Technologies (Hardware and Software) used by Teacher	Technologies (Hardware and Software) used by Children
Watching the final media product (digital story) with the whole group	Hardware: Computer, Slide Projector Software: Windows Media Player	---

DESCRIPTION OF THE DIGITAL STORY CREATED		TR-2-Talking Fruits
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ Presenting children visual (photos, pictures, cartoon, documentary, movie, etc.) or auditory elements (songs, sound effects, i.e. animal sound, etc.)</li> <li>▪ Reading/presenting story books/3-D books/silent books</li> <li>▪ Role play/drama/puppet show/stage play</li> <li>▪ Presenting children real world objects (fruits, vegetables, clothes, kitchenware, etc.) or objects from nature (pinecones, leaves, stone, etc.)</li> <li>▪ Site visit/observation</li> <li>▪ Presenting children critical/background/initial information (e.g. technological expertise, theme-content-core information, i.e. history of dinosaurs)</li> <li>▪ 2D/3D material production with children (puppet, animal shelter, poster, booklet, model house, costumes, etc.)</li> <li>▪ Presenting children concrete play objects (kinesthetic sand, toys, cardboard box, Cubetto, etc.)</li> <li>▪ Experiential activities</li> <li>▪ Telling stories</li> <li>▪ Gallery walk</li> <li>▪ Meeting specialists</li> <li>▪ Drawing/painting activities</li> </ul>
<b>Story Starting Point</b>		Stimuli for original construction
<b>Amount of Narrative Structure Provided</b>		Medium amount of structure. The child is given one or more potential story characters, a physical setting, and possibly an event.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Instructor and facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Write the children story and read</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	Visual-Verbal-Technology
<b>Type of Narrative</b>		Script
<b>Title of the Story</b>		Talking Fruits
<b>Brief Summary</b>		A child learns about importance of eating fruits when she gets ill because of not eating fruits.
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence- Complete episode
<b>Visual Elements</b>	Product Type	Animated slideshow
	Children's drawings, or pictures, or written words are embedded:	By both hand and using digital tools
	Written text	Not displayed
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	No music and no sound effects.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: Tablet (iPad), Printer, Chatter Pix Kids Technology used by children: Tablet (iPad), Chatter Pix Kids
<b>User Interface Employed in the Final Digital Story</b>		Touch user interface is used by both teacher and children.

**APPENDIX III:  
BEST EDUCATIONAL PRACTICES OF DST IN ECEC FROM FINLAND (FI)**

**DESCRIPTION FORM FOR THE 1<sup>ST</sup> BEST PRACTICE OF DST FROM FINLAND (FI): SPORTS NEW**

<b>BEST PRACTICE SELECTION CRITERIA</b>		<i>FI-1-Sports News</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Consistency of the objectives with the teaching methods/educational strategies</li> <li>▪ Including versatile ways of using technology</li> <li>▪ Addressing one or more specific curricular objectives</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Taking into account the audience of the story</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Making use of the affordances of digital tools in an efficient way</li> <li>▪ Combining digital and non-digital materials in a creative way</li> </ul>	

<b>DESCRIPTIVE INFORMATION</b>		<i>FI-1-Sports News</i>
<b>Country</b>	Finland (FI)	
<b>Academic Year</b>	2016/2017 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	1	
<b>Age Level of Children Participated in the Project</b>	72-84 months (6 years)	
<b>Total Number of Children in the Class</b>	17	
<b>Number of Project Groups</b>	Single group (every child participated in a rotated way)	
<b>Duration of the Project</b>	2-3 weeks	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	5-6 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	To promote narrative/language/expressive skills	
<b>Theme of the Project</b>	Sports	

PROJECT DESCRIPTION		<i>FI-1-Sports News</i>
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ Learning and practicing media literacy</li> <li>▪ Producing a fictional sports news story</li> </ul>
<b>Experience Space</b>		<ul style="list-style-type: none"> <li>▪ Classroom</li> <li>▪ School garden</li> </ul>
<b>Description of Setting/Arrangement</b>	Experience Space Size	Not explicitly mentioned
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	The project made use of both indoor and outdoor spaces according to the needs of the story.
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Concrete play objects: small toy characters representing ski jumpers, LEGOs</li> <li>▪ Drawing and painting materials: paper, crayons</li> <li>▪ Photos and images</li> <li>▪ Objects from nature: snow</li> <li>▪ Real world objects: a helmet, a pair of skis</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Discussion</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	Single/whole group (All children participated in crowd scenes, and other tasks were based on voluntary choices)
	Social Dimension of the Group in the Story Creation Process	Alternation of social dimensions: The production involved all the children in the whole group. Some children were in more active roles based on voluntary choices, while others participated in crowd scenes.
	Contextualization of the Project	No previous experience and familiarity to narration, technologies or digital storytelling.

**PROJECT ACTIVITIES**

<b>Introductory Activities</b>	Together with the teacher, the children watched examples of sports news and discussed what kind of a sports-related story they would like to make. The children played with small ski-jumper toys that were also used as a prompt for the story. The children showed interest in telling a story about a gold-medal winner, and this led to the main idea of the story.
<b>Digital Story Making Process</b>	The process consisted of the following steps and activities: <ul style="list-style-type: none"> <li>- Creating the script</li> <li>- Choosing roles</li> <li>- Making props and sets, taking pictures</li> <li>- Filming, interviews, news reporting</li> <li>- Designing a logo for the news (with LEGO blocks)</li> <li>- Drawing national flags</li> </ul>
<b>Evaluation and Assessment</b>	There were no significant problems in the process. The technology worked well, and the children enjoyed seeing themselves on the screen. The children were eager to participate in the various roles in the story. In the script-making phase, some children had a little difficulty with understanding the overall plan. Next time, the process could be even more child-driven, allowing the children to take more liberties with the structure of the news story. Some more time could also be reserved for the project, without any hurry to finish it.

**Use of Digital Technological Tools and Applications**

<i>Introductory Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Showing examples of sports news to children	iPad and Projector	---
<i>Digital Story Making Process Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Taking still pictures	iPad – Camera app	iPad – Camera app
Filming video clips	iPad – Camera app	iPad – Camera app
Assembling the story by combining pictures/videos/sounds and adding effects	iPad – iMovie	iPad – iMovie
<i>Evaluation and Assessment Activities</i>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
Watching the final media product (digital story) with the whole group	iPad – Camera roll Projector	---

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>FI-1-Sports News</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Presenting children visual (photos, pictures, cartoon, documentary, movie, etc.) or auditory elements (songs, sound effects, i.e. animal sound, etc.)</li> <li>▪ Presenting children concrete play objects (kinesthetic sand, toys, cardboard box, Cubetto, etc.)</li> <li>▪ Current events present in the media and in children's play (skiing world championships)</li> </ul>
<b>Story Starting Point</b>		Children's play scripts
<b>Amount of Narrative Structure Provided</b>		The child is given a topic and is asked to tell a story.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Supervise the children during activities</li> <li>▪ Non-judgmental attitude</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	Contemporary
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		Sports News
<b>Brief Summary</b>		A fictional news story about a ski jumper who participates in the world championships. He succeeds in his jumps and wins the competition. After his victory, he is interviewed about how he prepared for the event, and at the end he receives his gold medal on the podium.
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Mixed
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Displayed within titles/headings
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	There is mood music (non-diegetic) which is played/sung/performed by children. Sound effects are also used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: iPad (Camera app and iMovie) Technology used by children: iPad (Camera app and iMovie)
<b>User Interface Employed in the Final Digital Story</b>		Touch user interface is used by both teacher and children.

## DESCRIPTION FORM FOR THE 2<sup>ND</sup> BEST PRACTICE OF DST FROM FINLAND (FI): RUNAWAY ANIMALS

BEST PRACTICE SELECTION CRITERIA		<i>FI-2-Runaway Animals</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Supporting children’s agency and active role in the community</li> <li>▪ Supporting children’s social competencies</li> <li>▪ Intending adult’s role as facilitator</li> <li>▪ Children’s active participation in the process of the story’s construction</li> <li>▪ Children’s participation in story’s construction process as designers of each story’s component</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> <li>▪ Taking into account the audience of the story</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Making use of the affordances of digital tools in an efficient way</li> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Children’s autonomous use of technologies</li> </ul>	

DESCRIPTIVE INFORMATION		<i>FI-2-Runaway Animals</i>
<b>Country</b>	Finland (FI)	
<b>Academic Year</b>	2017/2018 academic year	
<b>Status of the School</b>	Municipal Kindergarten	
<b>Number of Teachers Performed the Project</b>	1	
<b>Age Level of Children Participated in the Project</b>	36-60 months (3-4 years)	
<b>Total Number of Children in the Class</b>	21	
<b>Number of Project Groups</b>	Single group (composed of 4 children)	
<b>Duration of the Project</b>	3 months	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	5-6 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> </ul>	
<b>Theme of the Project</b>	Fairytale	

PROJECT DESCRIPTION		<i>FI-2-Runaway Animals</i>
<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>Coming up with a story so that all children get to participate in planning it</li> </ul>
<b>Experience Space</b>		Teachers' room
<b>Description of Setting/Arrangement</b>	Experience Space Size	Not explicitly mentioned
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	The teachers' meeting room was chosen as the main space because this way the set of the movie did not have to be taken down and rebuilt again between sessions.
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>Concrete play objects: finger puppets</li> <li>Drawing and painting materials: paper, cardboard, crafts</li> <li>Structured or non-structured articles from the physical environment: popsicle sticks, fishing line, felt fabric</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>Digital storytelling</li> <li>Discussion</li> <li>Questioning</li> <li>Demonstration</li> <li>Narration</li> <li>Cooperative learning</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Not explicitly mentioned/ambiguous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>Language skills</li> <li>Social skills</li> <li>Children's own choice (One child left the group, not wanting to finish the film)</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Alternation of social dimensions: Most of the actual process was conducted in a small group. Before the process, children were familiarized with storytelling in pairs with the aid of the "story crafting" method.
	Contextualization of the Project	Previous experience and familiarity to narration and technologies.

PROJECT ACTIVITIES		FI-2-Runaway Animals	
<b>Introductory Activities</b>	The story was inspired by finger puppets that were initially only intended to be used as props in initial story crafting, with the aim of getting the children familiarized with storytelling before the project. However, the children liked the finger puppets so much that they wanted to use them as the characters of the digital story. Thus, the storyline was built around the finger puppet characters.		
<b>Digital Story Making Process</b>	<p>Session 1 (45 min): The teacher introduced the Stop Motion to the children, explaining how it was used. The group discussed what has to be taken into account so that the filming succeeds (keeping hands out of the frame after moving an item, being still when a picture is taken, being quiet when sound is being recorded). A storyline was developed around the finger puppet characters (by discussing together and with the aid of teacher's questions): what happens in the film and how it can be realized. The background for the story was designed.</p> <p>Session 2 (45 min): Making the backdrop and props. Beginning filming.</p> <p>Session 3 (35 min): Filming.</p> <p>Session 4 (20 min): Filming.</p> <p>Session 5 (20 min): Transferring the film to iMovie. Getting familiar with adding voice and sound effects to a film.</p> <p>Session 6 (40 min): Recording the soundtrack with iMovie.</p> <p>Session 7 (5 min): Presenting the film to the whole group using a projector.</p>		
<b>Evaluation and Assessment</b>	<p>The children were motivated and active; one of the selection criteria had been the assumption that these children would be able to focus and to bring their own ideas into the process.</p> <p>Using a stop motion app was somewhat too time-consuming for this purpose. Making the film with children was slow, and problems with concentration and patience started to emerge. In the future, it might be easier to choose a simpler application that would make it easier for the children to follow the progress (even though we used plenty of time for the project, the children felt that nothing was happening). It would also be better to complete the project within a shorter period of time: now the project stretched over several months, and sometimes the children forgot where we had left off previously.</p> <p>The main role of the adult was to collect the children's ideas and to coordinate the division of work between the children.</p>		
<b>Use of Digital Technological Tools and Applications</b>			
<b>Introductory Activities</b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Presenting the stop motion app to the children	iPad – a stop motion app		---
<b>Digital Story Making Process Activities</b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Taking pictures for the animation	iPad – a stop motion app		iPad – a stop motion app
Adding speech and sound effects	iPad – iMovie		iPad – iMovie
<b>Evaluation and Assessment Activities</b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
Watching the final media product (digital story) with the whole group	iPad – Camera roll Projector		---

DESCRIPTION OF THE DIGITAL STORY CREATED		<i>FI-2-Runaway Animals</i>
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Role play/drama/puppet show/stage play</li> <li>▪ Presenting children concrete play objects (kinesthetic sand, toys, cardboard box, Cubetto, etc.)</li> <li>▪ Presenting children critical/background/initial information (e.g. technological expertise, theme-content-core information, i.e. history of dinosaurs)</li> <li>▪ Telling stories</li> </ul>
<b>Story Starting Point</b>		Children's narratives
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Supervise the children during activities</li> <li>▪ Non-judgmental attitude</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	Verbal-Visual-Technology
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		Runaway Animals
<b>Brief Summary</b>		Zoo animals decide to escape. They run to the city and hide. Their caretakers' notice they are missing, find them hiding in the city, and bring them back to the zoo.
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Animation
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Displayed within titles/headings
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	No music. Sound effects are used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: iPad (a stop motion app and iMovie) Technology used by children: iPad (a stop motion app and iMovie)
<b>User Interface Employed in the Final Digital Story</b>		Touch user interface is used by both teacher and children.

**APPENDIX IV:  
BEST EDUCATIONAL PRACTICES OF DST IN ECEC FROM GERMANY (DE)**

**DESCRIPTION FORM FOR THE 1<sup>ST</sup> BEST PRACTICE OF DST FROM GERMANY (DE): A RAINY DAY ON THE MEADOW**

<b>BEST PRACTICE SELECTION CRITERIA</b>		<i>DE-1-A Rainy Day on the Meadow</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Addressing one or more specific curricular objectives</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Children's active participation in the process of the story's construction</li> <li>▪ Children's participation in story's construction process as designers of each story's component</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> <li>▪ Representing correlations of multimodal elements</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Combining digital and non-digital materials in a creative way</li> <li>▪ Making use of the affordances of digital tools in an efficient way</li> </ul>	

<b>DESCRIPTIVE INFORMATION</b>		<i>DE-1-A Rainy Day on the Meadow</i>
<b>Country</b>	Germany (DE)	
<b>Academic Year</b>	2016/2017 academic year	
<b>Status of the School</b>	Private Kindergarten	
<b>Number of Teachers Performed the Project</b>	2	
<b>Age Level of Children Participated in the Project</b>	48-72 months (4-5 years)	
<b>Total Number of Children in the Class</b>	6	
<b>Number of Project Groups</b>	Single group (composed of 6 children)	
<b>Duration of the Project</b>	1 month	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	5-6 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To develop technological competences</li> <li>▪ To promote narrative/language/expressive skills</li> <li>▪ To enhance social and collaborative skills and learning</li> </ul>	
<b>Theme of the Project</b>	Nature	

**PROJECT DESCRIPTION**

*DE-1-A Rainy Day on the Meadow*

<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ To develop and produce a story collaboratively</li> <li>▪ To use the tablet in order to tell the story</li> <li>▪ To realize the story as a stop-motion film</li> <li>▪ To react flexibly during the sessions</li> <li>▪ To increase the stamina</li> </ul>
<b>Experience Space</b>		The “Workshop Room”, which is only open at certain times of the day when teachers can provide adequate supervision for woodworking activities.
<b>Description of Setting/ Arrangement</b>	Experience Space Size	Medium
	Indoor Design (Furnishing and Equipment), Arrangement of Play Areas/Interest Centers and Arrangement of the Learning Materials (Resources/Play Objects)	Besides a workbench and woodworking tools, children can also find a wide range of art media in the Workshop Room. It offers good natural light and sufficient space for the children to work comfortably.
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Drawing and painting materials</li> <li>▪ Objects from nature</li> <li>▪ Real world objects</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Discussion</li> <li>▪ Questioning</li> <li>▪ Demonstration</li> <li>▪ Educational play</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Kindergarten attendance in the previous years</li> <li>▪ Children’s own choice</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Alternation of social dimensions: First, the children were given three keywords and invented individual stories they told the whole group. Afterwards, the children developed a story together and every child recorded the story using a storyboard. During the making of the digital story, the whole group worked together and the children took on different roles.
	Contextualization of the Project	Previous experience and familiarity to narration and technologies

PROJECT ACTIVITIES		<i>DE-1-A Rainy Day on the Meadow</i>	
<b>Introductory Activities</b>	The children were made familiar with the technology (recording images and sounds), before they started to develop their story. The story was developed using circle time activities within which the children told stories using keywords. Based on their ideas and using the furnishings given in the workshop (workbench with drill holes), the children came up with the core idea of their joint story: letting earthworms crawl out of their holes.		
<b>Digital Story Making Process</b>	After the children had developed the idea of the story, they drew storyboards individually and presented them to the teachers and the group, so that the final story could be developed. The children then got to know the stop-motion technology by watching a demo and making a short stop-motion film using a rubber duck, before they started to produce the images of the story. They took on different roles: One child recorded the image, while the others moved the figures. Afterwards, the sound was recorded. The combination of the images and the sound into the final digital story was realized by the teachers.		
<b>Evaluation and Assessment</b>	The teachers documented the work of the children. Furthermore, the work was continuously reflected with the children at the beginning of each session. The children together with their teachers watched the final product.		
<b>Use of Digital Technological Tools and Applications</b>			
<b><i>Introductory Activities</i></b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
presenting different camera types and their functions (recording images)	Cameras and iPad (camera function)		Cameras and iPad (camera function)
<b><i>Digital Story Making Process Activities</i></b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
presenting / testing the stop-motion technique	iPad / iPad (iMotion Pro)		iPad (iMotion Pro)
producing the images for the digital story	---		iPad (iMotion Pro)
combining images and sound into the final digital story	iPad (iMovie)		---
<b><i>Evaluation and Assessment Activities</i></b>			
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>		<b>Technologies (Hardware and Software) used by Children</b>
watching the final digital story	iPad / projector / screen		---
presenting the final digital story to an audience	DVD with digital story / TV		---

DESCRIPTION OF THE DIGITAL STORY CREATED		DE-1-A Rainy Day on the Meadow
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ 2D/3D material production with children (puppet, animal shelter, poster, booklet, model house, costumes, etc.)</li> <li>▪ Educational plays</li> <li>▪ Presenting children critical/background/initial information (e.g. technological expertise, theme-content-core information, i.e. history of dinosaurs)</li> </ul>
<b>Story Starting Point</b>		Children's play scripts
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Guide and facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Observe children during activities</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	<ul style="list-style-type: none"> <li>▪ Verbal-Visual-Technology</li> <li>▪ Play with Characters-Technology</li> </ul>
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		A Rainy Day on the Meadow
<b>Brief Summary</b>		Some earthworms spend a day on a meadow where they help a hedgehog removing an apple from its spines.
<b>Story Structure Category and Level of Story Grammar Development</b>		Reactive sequence
<b>Visual Elements</b>	Product Type	Animation
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Not displayed
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	Music (diegetic) is included played/sung/performed by children. Sound effects are also used.	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: iPad (StopMotion), iPhone (Video Recording Software), Computer (Video Cutting Software) Technology used by children: iPad (StopMotion)
<b>User Interface Employed in the Final Digital Story</b>		Touch user interface is used by both teacher and children.

## DESCRIPTION FORM FOR THE 2<sup>ND</sup> BEST PRACTICE OF DST FROM GERMANY (DE): THE STORY OF DRAGON PAUL

BEST PRACTICE SELECTION CRITERIA		<i>DE-2-The Story of Dragon Paul</i>
<b>Elements Regarding the Process</b>	<ul style="list-style-type: none"> <li>▪ Consistency of the main goal/objectives of the project (e.g. to develop technological competencies, to promote narrative skills, etc.) with the skills developed at the end of the process</li> <li>▪ Providing materials for children in a rich variety during introductory activities and digital story making process</li> <li>▪ Intending adult's role as facilitator</li> <li>▪ Children's active participation in the process of the story's construction</li> <li>▪ Children's participation in story's construction process as designers of each story's component</li> <li>▪ Meeting at least the first three categories of story structure/levels of story grammar development (descriptive sequence, action sequence and reactive sequence)</li> <li>▪ Conducting at least four sessions for the project activities</li> <li>▪ Offering children a non-judging context</li> </ul>	
<b>Elements Regarding the Product</b>	<ul style="list-style-type: none"> <li>▪ Resulting in a coherent story in terms of story grammar</li> <li>▪ Representing correlations of multimodal elements</li> </ul>	
<b>Elements Regarding both the Process and the Product</b>	<ul style="list-style-type: none"> <li>▪ Making use of the affordances of digital tools in an efficient way</li> </ul>	

DESCRIPTIVE INFORMATION		<i>DE-2-The Story of Dragon Paul</i>
<b>Country</b>	Germany (DE)	
<b>Academic Year</b>	2016/2017 academic year	
<b>Status of the School</b>	Private Kindergarten	
<b>Number of Teachers Performed the Project</b>	2	
<b>Age Level of Children Participated in the Project</b>	72-84 months (5-6 years)	
<b>Total Number of Children in the Class</b>	6	
<b>Number of Project Groups</b>	Two groups (composed of 3 children in each group)	
<b>Duration of the Project</b>	2-3 weeks	
<b>Amount of Sessions (Number of Dedicated Lessons)</b>	5-6 sessions/lessons	
<b>Aim/Main Goal of the Project</b>	<ul style="list-style-type: none"> <li>▪ To enhance social and collaborative skills and learning</li> <li>▪ To foster imaginary and creative ability</li> </ul>	
<b>Theme of the Project</b>	Friendship / Fairytale	

**PROJECT DESCRIPTION**

*DE-2-The Story of Dragon Paul*

<b>Objectives and Expected Outcomes</b>		<ul style="list-style-type: none"> <li>▪ To strengthen the community</li> <li>▪ To increase the children’s imagination and creativity</li> <li>▪ To make the children experience their self-efficacy</li> </ul>
<b>Experience Space</b>		A room that was only used (and decorated) for the project activities.
<b>Other Resources and Materials Used Beyond Digital Devices</b>		<ul style="list-style-type: none"> <li>▪ Concrete play objects</li> <li>▪ Drawing and painting materials</li> <li>▪ Books</li> <li>▪ Photos and images (film posters)</li> <li>▪ Objects from nature</li> <li>▪ Real world objects (costumes and film reel)</li> </ul>
<b>Teaching Methods and Educational Strategies</b>		<ul style="list-style-type: none"> <li>▪ Digital storytelling</li> <li>▪ Role playing/Drama</li> <li>▪ Demonstration</li> <li>▪ Educational play</li> <li>▪ Narration</li> <li>▪ Cooperative learning</li> <li>▪ Brainstorming</li> </ul>
<b>Educational Context</b>	Project Group Make Up	Heterogeneous
	Group Selection Criteria	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Kindergarten attendance in the previous years</li> <li>▪ Previous working group membership</li> </ul>
	Social Dimension of the Group in the Story Creation Process	Small group-work in the whole process of story creation
	Contextualization of the Project	Previous experience and familiarity to narration

PROJECT ACTIVITIES		DE-2-The Story of Dragon Paul
<b>Introductory Activities</b>	The teacher asked the children about their experience with stories in general and explained the aim of the project to the children. Then, the children developed their own stories using different techniques such as “Stories out of the Box” where the children drew different cards with images from three boxes (one for the place, one for the characters and one for the props) and told a story that linked together all of these images. They acted out this story as a role play. Afterwards, the children were made familiar with the technology –i-theatre – and discovered its functions through independent experimentation.	
<b>Digital Story Making Process</b>	The children developed their idea for the stories. Here, the children could use the techniques they got to know within the introductory activities. Also, the children could use different material offered in the workshop such as books, play objects and drawing and painting materials for coming up with their stories they also recorded as a storyboard.	
<b>Evaluation and Assessment</b>	The teachers documented the work of the children, e.g. with photos. Furthermore, each child got a folder for collecting all the materials produced within the project. Also, the story was watched together before it was finally presented to an audience.	
<b>Use of Digital Technological Tools and Applications</b>		
<b>Introductory Activities</b>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
introducing and working with the technology	i-theatre	i-theatre
<b>Digital Story Making Process Activities</b>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
producing the digital story	---	i-theatre
<b>Evaluation and Assessment Activities</b>		
<b>Activities</b>	<b>Technologies (Hardware and Software) used by Teacher</b>	<b>Technologies (Hardware and Software) used by Children</b>
watching the final digital story	Computer / Projector / Screen	---
presenting the final digital story to an audience	Computer / Projector / Screen	---

DESCRIPTION OF THE DIGITAL STORY CREATED		DE-2-The Story of Dragon Paul
<b>Elements that Triggered the Story</b>		<ul style="list-style-type: none"> <li>▪ Circle time (open ended questions, discussion, analogy, etc.) activities</li> <li>▪ Educational plays</li> <li>▪ Role play/drama/puppet show/stage play</li> <li>▪ Presenting children real world objects (fruits, vegetables, clothes, kitchenware, etc.) or objects from nature (pinecones, leaves, stone, etc.)</li> <li>▪ 2D/3D material production with children (puppet, animal shelter, poster, booklet, model house, costumes, etc.)</li> <li>▪ Presenting children critical/background/initial information (e.g. technological expertise, theme-content-core information, i.e. history of dinosaurs)</li> <li>▪ Telling stories</li> </ul>
<b>Story Starting Point</b>		Children's play scripts
<b>Amount of Narrative Structure Provided</b>		No structure. The child chooses the topic and formulates a narrative.
<b>Role of the Teacher and Strategies to Develop the Story</b>	Main Role of the Teacher	Guide and facilitator
	Main Task Performed by the Teacher	<ul style="list-style-type: none"> <li>▪ Before, prepare the environment and the materials</li> <li>▪ Observe children during activities</li> <li>▪ Supervise the children during activities</li> <li>▪ Use guiding questions</li> <li>▪ Help consistency in the use of technologies</li> </ul>
	Phases of the Story Development	<ul style="list-style-type: none"> <li>▪ Verbal-Visual-Technology</li> </ul>
<b>Type of Narrative</b>		Fictional/make-believe story
<b>Title of the Story</b>		The Story of Dragon Paul
<b>Brief Summary</b>		Dragon Paul wants to go on a hike with the princess, but the king does not allow the princess to go. After some series of events, the king finally allows the princess to go with the Dragon Paul.
<b>Story Structure Category and Level of Story Grammar Development</b>		Goal-directed sequence – Complete episode
<b>Visual Elements</b>	Product Type	Animation
	Children's drawings, or pictures, or written words are embedded:	By hand
	Written text	Not displayed
<b>Voicing</b>	Voicing is clearly understandable.	
<b>Soundtrack</b>	No music and no sound effects	
<b>Technological Tool and Application Employed in the Final Digital Story</b>		Technology used by teacher: Computer (Video Cutting Software) Technology used by children: I-theatre
<b>User Interface Employed in the Final Digital Story</b>		Graphical user interface is used by teacher. Tangible user interface is used by children.